

American Aviation

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Review

Liberate for Defense

THE Axis powers have developed since 1932 an air force of about 25,000 airplanes, it is reliably estimated.

During the same years, the U. S. A. has made available a force of about 5,000 airplanes.

The past eight years have been full of demands by private industry for the freedom to expand and develop scheduled air transport as an aid to commerce, industry, recreation and social life, as well as a backlog for national defense.

A recent illustration is the demand of Captain Eddie Rickenbacker that first class mail be carried by air. In this way, he estimates, 10,000 transport planes and 80,000 pilots and co-pilots could be provided on a paying commercial basis, as an emergency backlog if and when we may need them.

Meantime the mail of commerce and industry could be delivered overnight anywhere in the U. S.

Other illustrations of private industry's offer to help build air power with some saving to the taxpayers are seen in the proposal of President W. A. Patterson of United Air Lines to demonstrate the feasibility of feeder service through an experimental route in the prosperous central valley of California—Reeding to Fresno with stops approximately every fifty miles—and of various feeder line applicants such as Southwest Feeder Airlines Inc., who are desirous of giving local service to important areas. The United offer was made nearly two years ago and was turned

(Turn to page 20)

The Independent
Voice of
American Aeronautics

Three Companies Struggle for Transport in Central America

Eastman Foresees Unified Carriers

Eventual creation by the federal government of a permanent agency to provide leadership and coordination in solving transportation problems, was urged by Joseph Eastman, chairman of the Interstate Commerce Commission, speaking before the Transportation Club of Buffalo, N. Y., Nov. 12. Commenting on the board of investigation and research set up by the Transportation Act of 1940, Eastman said that following the report of this board, a permanent agency, not burdened as the ICC with regulatory duties, would be desirable for continuing the study of transportation problems.

"While we leave the management of the carriers to private enterprise, only the government . . . is in position to supply disinterested leadership with respect to transportation in its entirety," the former Federal Coordinator of Transportation declared.

Hope was expressed that carriers would discover "opportunities for joint operations" to give better service to the public. In time, it was suggested, "we shall have, not railroad companies or other operators of one particular type of carrier, but transportation companies operating

(Turn to page 11, col. 1)

Announces Changes



Myron B. Gordon

Vice president and general manager of Wright Aeronautical Corp. who announced major executive changes in the company following the resignation of George F. Chapline, new president of Brewster Aeronautical Corp. (Story on page 28).

Plant Expansion, Production, Sales, Deliveries

Expansion Activities Taper Off As Producers Utilize New Space

Douglas and Grumman Get Factory Awards; Fairchild, Lockheed, Thompson Products, Bendix Aviation, Kellett, Aero Products and Menasco Expanding

NEWS of plant expansion and added facilities coming from aircraft, engine and parts manufacturers during the last fortnight was of less significance than for several months, indicating, perhaps, that producers of defense equipment, for the time being, will settle down to building previously announced factory additions and continue work of filling U. S. and foreign orders in existing plant space.

Douglas Aircraft Co. and Grum-

man Aircraft Engineering Corp. received contract awards from the War Dept. and Navy Dept., respectively, for expansion purposes.

The award to Douglas calls for plant expansion construction by the firm's subsidiary company, Western Land Improvement Co. at Long Beach, Cal., to cost \$11,254,700. The new facilities at Long Beach, announced previously by Douglas, will be constructed under the terms of

(Turn to page 26, col. 2)

American Airlines, Am. Export Attempt To Compete With PAA

DESPITE the war and the nation's national defense program, the struggle for air transport expansion moves apace. Within the past two months the center of the battle has moved from the U. S. to Central America where two American companies are attempting to invade the territory held exclusively heretofore by a third American company.

The territory between the U. S.-Mexican boundary and the Panama Canal Zone is now the three-cornered center of interest in air transportation. Pan American Airways is engaged in protecting its interests while American Airlines Inc., a company heretofore engaged solely in domestic service within the U. S., and American Export Airlines Inc. are attempting to establish competitive routes into Mexico and Central America from various points within the U. S.

Both newcomers have scored points, American Export by its purchase of TACA airlines in five Central American countries, and American Airlines by its securing of a permit from Mexico to fly to Mexico City. Action by the Civil Aeronautics Board, however, is necessary before either of these companies can be said to have been successful in invading Pan American's territory.

For over 10 years Pan American Airways has operated from the U. S. to the Panama Canal via Mexico and Central America. The international line operates from Brownsville to Mexico City and thence southeast through the capitals of Guatemala, El Salvador, Honduras, Costa Rica and Panama. A PAA subsidiary, Compania Mexicana de Aviacion, S. A., has operated from Los Angeles to Mexico City with several intermediate stops, and there are several other PAA routes reaching such points as Merida and Tampico. For many years PAA operated several times a week on the international route to Panama, more recently has increased schedules to

(Turn to page 14, col. 2)

A network of skyways from coast to coast? • A fleet of transport planes, and the latest airway facilities? • A service offering fast, frequent, economical schedules between cities large and small?

After all, what IS an airline?

- An airline is all these things—and many more.

Above all, it is an organization of people . . . well trained . . . and well acquainted with the job of furnishing the nation efficient and reliable transportation, the swiftest ever known.

It is an organization of pilots—alert, competent and of sound judgment . . . of dispatchers—analytical and weather wise . . . of stewardesses who are registered nurses—attentive, thoughtful and of pleasing personality . . . of traffic men—prompt and polite . . . of progressive supervisors and efficient accountants . . . of mechanics—thorough and reliant . . . and of many others, each with special qualifications for his or her particular branch of the work

It is a group of people with an unselfish spirit of teamwork . . . a deep-rooted loyalty to their company . . . and underlying everything a constant awareness of their basic responsibility to the traveling public.

Are these just paper specifications for ideal airline personnel?

Not at all. They have been drawn from real people . . . from United Air Lines' three thousand employees, including hundreds with more than ten years' experience, and some whose service on the Main Line Airway extends back to its inauguration by the Government twenty years ago!

Summed up, they stand for Character . . . the real backbone of any public service organization.



YEAR ROUND . . . THE MAIN LINE AIRWAY

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Feb. 15-2

Feb. 22-1

Mar. 3-7

Mar. 24-1

Apr. 23-5

XUM

United Airports Sale to Lockheed Approved

Acquisition of the outstanding capital stock of United Airports Company of California Ltd. by Lockheed Aircraft Corp. from United Air Lines was approved by the Civil Aeronautics Board Nov. 23, following brief hearing Nov. 19 before Examiner J. Francis Reilly who recommended approval of the transaction.

The agreement between United Air Lines and Lockheed, dated Nov. 9, 1940, provides that the latter buy all 13,840 issued shares of United Airports from United Air Lines for \$1,500,000. United Airports has authorized capital stock of 25,000 shares, \$100-par.

CAB stated that the deal, which means transfer to Lockheed of ownership of Union Air Terminal at Burbank, was in the interest of national defense and would not interfere with present commercial operation. Lockheed will use the field for test flying.

Sale of the field followed recent decision of all airlines operating from Los Angeles to transfer their bases from Union to the new Los Angeles Municipal Airport on completion of the latter project. After United Air Lines, American Airlines, TWA, and Western Air Express move to the new airport, Union Air Terminal will be available for airline take-offs and landings when weather or other conditions prevent use of the municipal field.

Foreign Concerns Planning U. S. Factories—Report

Fantus Factory Locating Service has asserted that it is unable to reveal at this time the identity of an "internationally known" French corporation manufacturing aircraft parts, accessories and engine equipment, which is installing machinery and equipment valued at \$250,000 in a plant at Norwalk, Conn.

Executives of the corporation are negotiating for several large contracts in the "aircraft field."

The French concern, described as only one of several large foreign companies planning to establish factories in the U. S. is said to have had five modern plants in various parts of France prior to German occupation, employing approximately 4,000 men and doing a gross volume of \$30,000,000 at the time war production ceased.

Calendar

- Nov. 29-Dec. 2—Air Line Pilots Association, Annual Convention, Congress Hotel, Chicago, Ill.
- Dec. 2-7—National Exposition of Power & Mechanical Engineering, Grand Central Palace, New York, N. Y.
- Dec. 5—Annual Meeting of Members of the Aeronautical Chamber of Commerce of America Inc., Roosevelt Hotel, New York, N. Y.
- Dec. 9-14—13th National Asphalt Conference, Adolphus Hotel, Dallas, Tex.
- Dec. 11-15—National Chemical Exposition, Stevens Hotel, Chicago, Ill.
- Dec. 17—Wright Brothers Lecture for 1940, "Recent Fog Investigations," by Dr. Sverre Pettersen, Columbia University, New York, N. Y.
- Dec. 17—Pan American Aviation Day.
- Jan. 6-10—Annual Meeting and Engineering Display, Society of Automotive Engineers, Book-Cadillac Hotel, Detroit, Mich.
- Jan. 10-12—1941 All-American Air Maneuvers, Miami, Fla.
- Jan. 29-31—9th Annual Meeting of the Institute of the Aeronautical Sciences, Columbia University, New York, N. Y.
- Feb. 15-23—6th Annual National Sportsmen's Show, Grand Central Palace, New York, N. Y.
- Feb. 22-Mar. 2—3rd Annual International Sportsmen's Show, International Amphitheater, Chicago, Ill.
- Mar. 3-7—American Society for Testing Materials, Mayflower Hotel, Washington, D. C.
- Mar. 24-29—Machine & Tool Progress Exhibition, Detroit, Mich.
- Apr. 25-Sent. 2-3rd Annual American Coen Soaring Contest, Joliet, Ill.

Mass Delivery I



A large mass delivery of military planes was made in mid-November by Vultee Aircraft Inc. at its home plant, Downey, Cal., when 33 Vultee BT-13 basic trainers took off under the direction of the Army Air Corps. The planes left Vultee Field under the command of Capt. T. J. Meyer, director of the Army Air Corps training program in the western area, and started to their destination, Moffett Field, Cal.

"The magnitude of this single delivery is emphasized by the fact that it represents more actual production than could have been accomplished by a major aircraft manufacturer during a month only a short time ago," a Vultee announcement said.

Mass Delivery II



Forty Republic P-35A pursuits, requisitioned by the U. S., at the Republic Aviation plant, Farmingdale, N. Y., are shown as they leave for a west coast port where they were shipped as equipment for new pursuit groups established on the Philippine Islands. These 40 fighters, originally produced for the Royal Swedish Air Force, were loaded on a single train.

Pan American Air Day Selection Hit

Designation of Dec. 17 as Pan American Aviation Day to mark the contributions made by civil aviation in fostering closer development of cultural and economic relations between the American republics has brought a protest from the Brazilian Aero Club.

Pointing out that President Roosevelt referred to the date as marking the anniversary of "the first successful flight of a heavier-than-air machine" by the Wright brothers, the Aero Club contended that the first flight in heavier-than-air craft was actually made by a Brazilian, Santos Dumont.

\$5,000,000 Base for Blimps Planned in Boston Vicinity

The Navy will construct a \$5,000,000 dirigible base "in the general vicinity of Boston" and auxiliary stations near Portsmouth, N. H., and Newport, R. I., according to Capt. Charles E. Rosendahl.

The base, Rosendahl declared, will be one of three to be constructed on the Atlantic seaboard in connection with the Navy's building of 48 lighter-than-air ships. Work on the bases is scheduled to begin next spring.

Scanlon Assigned to Eire

Brig. Gen. Martin F. Scanlon, military air attache to England, has also been assigned as military air attache to Eire, according to the War Dept.

He will continue to maintain headquarters in London as well as at Dublin.

Look to the Airlines, Railway Head Tells AAR

Railroad executives were urged to take lessons from the airlines in methods of profitable operation at the annual meeting of the Association of American Railroads in New York, Nov. 15.

"The railroads no longer have a monopoly in the transportation field," warned E. E. Norris, president of Southern Railway. "We have competition now everywhere. Our competitors are young and vigorous. Their personnel has no inhibitions, no heritage of monopoly attitudes."

With an eye toward airline traffic procedure, Norris suggested "that we still consider the job of 'humanizing' the Southern Railway to be our first objective in the fight to live as a solvent, useful enterprise."

Improved Pilot Tests Aim of Mayo Study

Completion of arrangements by which the Mayo Foundation for Medical Education and Research, at request of the Civil Aeronautics Administration, will conduct extensive research into the correlation between physical examinations of civilian pilots and their actual performance in flight, was announced by Robert H. Hinckley, assistant secretary of Commerce, Nov. 20.

The Mayo Foundation will conduct the study at its own expense in an effort to develop more accurate yardsticks for predicting on the ground the relative ability of pilots and prospective pilots, Hinckley said. Only cost to the government will be CAA flight courses for several of the doctors conducting the studies.

Ten Mayo specialists, according to the plan, will not only study the students on the ground but will follow them step by step through flight courses to watch and measure the relation of actual performance to the medical forecasts. Doctors without pilot experience will take CPT courses along with the students being studied. Dr. W. Randolph Lovelace II, of the foundation, has informed the CAA.

The program will be conducted primarily from a civilian point of view and may be the first step toward instituting, in the field of aviation, medical schools for civilians comparable to those which the armed forces have had for some time, Hinckley indicated.

Paper Wants U. S. Fields

Open to Canadian Trainees

"The Chicago Daily News," controlled by Secretary of Navy Frank Knox, has commended editorially a plan to permit training of several Canadian flyers at a private air school in Florida and has urged the War Dept. to "make our southern air fields available to the regular Canadian training plan."

"The War Dept. has consented to allow a contingent of Canadian or British airmen to attend the navigation school for long-range flying maintained by Pan American Airways at Miami," the editorial said. "Under the terms of our joint defense agreement with Canada, we have an equally clear right to make our southern fields available to the regular Canadian training plan."

State Air Laws Reviewed

October issue of *The Journal of Air Law and Commerce*, published by Northwestern University contains texts of the Kentucky Aeronautics Act setting up a six-man Kentucky Aeronautic Commission and the Rhode Island Aeronautics Act, which created the position of administrator of aeronautics and provided for a state aeronautics advisory board.

Bulletin

The National Advisory Committee for Aeronautics announced on Nov. 25 the selection of Cleveland as the site of the new \$8,400,000 aircraft engine laboratory. The new plant will be composed of an engine research wind tunnel, reproducing conditions existing at 30,000 ft., an engine research laboratory, a fuels and lubricants research laboratory, engine propeller test house, hanger (flight research laboratory) and service and administration buildings.

News in Pictures



Wildlife agents of the Alaska Game Commission, Sam White and Ray Renshaw, photographed at the Hagerstown, Md., Airport with the Ranger-powered Fairchild 24 and the Warner-powered Fairchild 24 on which they recently took delivery. These ships will be used by the game commission, operating from Juneau and Fairbanks.



Clyde Pangborn is shown as he arrived in Chicago recently aboard a TWA Stratoliner. He expected to spend some time in Chicago as a member of the Clayton Knight Committee conferring with pilots of the Chicago area and giving information on qualifications necessary for service flying for the British and Canadian governments. Pangborn is shown on arrival with Hostess June Barrett.



Athena Smith of Lockheed Aircraft Corp. demonstrates the comparative sizes of an ordinary Speed Graphic lens with the f:16 Goerz process lens to be used by the Lockheed photographic department in a new photo-loft-template process which will speed up production of aircraft by breaking the template bottleneck. The lens is 10 inches long, 6 inches in diameter, weighs 18 pounds and has a focal length of 70 inches. The Speed Graphic lens is 5 1/4 inch focal length, 1 1/2 inches in diameter and weighs but 5 ounces.



Maj. Charles H. Kruse (left) and Capt. Jacob W. McCrillis, both of the Air Reserve, smile as they recall a day at the Army's Mather Field at Sacramento, Cal., 10 years ago when their two planes were entangled as a third, flying at terrific speed, crashed into them. Kruse and McCrillis took to their parachutes. The third pilot managed to bring his plane to the ground under its own power. McCrillis recently was assigned to Headquarters, 45th Air Base Group, Hamilton Field, Cal., and Kruse is in command of the 2nd Materiel Squadron at Hamilton.

U. S. & Great Britain Agree on Base Sites

Agreement between the U. S. and Great Britain upon the location of sites for naval and air bases in the Bahamas, Jamaica, Antigua, St. Lucia, British Guiana, Bermuda and Newfoundland has been announced by the Navy Dept. No decision has been reached regarding Trinidad.

Tentative plans call for the building of underground warplane hangars at the bases acquired in the trade for 50 destroyers. Government engineers are reported en route to the sites to begin preliminary work.

In Jamaica, reciprocal rights are "to be granted to both U. S. and British military aircraft within the limits of capacity, the controlling authorities to have first call on the available accommodations."

At Bermuda, a landplane base will be located on Long Bird Island and a seaplane base on St. David's Island. A seaplane base will be constructed on Gros Islet Bay, St. Lucia; a patrol plane squadron base with an airdrome 25 miles up the River Demerara and a seaplane base near Saddle on the River Essequibo in British Guiana; and an air base on Argentia Peninsula, Newfoundland.

RAF Shifts Command; Air Unit to Aid Army

Formation of an Army co-operation command in the Royal Air Force and a major shake-up in the high command of the RAF which will give Great Britain a new fighter chief have been announced by the British Air Ministry.

The new RAF group is not a separate Army air arm such as the British War Office has been demanding, but represents a compromise between the War and Air Ministries. The command is to include all squadrons allotted to the Army in the United Kingdom, together with associated training units. Its primary function will be to organize, experiment with and train all forms of collaboration between the two services. The command will include dive bombers, reconnaissance planes and fighters, and will train pilots to work with the artillery and mobile units of the Army.

Chief of the new command will be Air Marshal Sir Arthur Barratt, who was commander of the British Air Force in France.

In other RAF personnel shifts, Air Chief Marshal Sir Hugh Dowding, head of the Fighter Command, will be sent to the U. S. on "special duty" by Lord Beaverbrook, minister of aircraft production. He will be succeeded by Air Vice-Marshal Sir William Douglas, now deputy chief of air staff. Air Vice-Marshal Arthur T. Harris will take the post vacated by Douglas, while Air Marshal Ernest L. Gossage, now air member for personnel, will become head of the Balloon Command. Gossage's place will be taken by Air Vice-Marshal Philip Babington, who will become Acting Air Marshal.

A final change, which promoted the former chief of the Balloon Command, Air Vice-Marshal Owen T. Boyd, to Air Marshal and named him deputy to the air officer commanding the Middle East, met with failure when Boyd, on the way to his new station, was forced down and captured by the Italians.

Canada Buys Equipment To Fight Winter Snows

Purchase made by the Canadian Dept. of Munitions and Supply in preparation for winter conditions at the Dominion's airfields include 48 snow blowers, 92 trucks equipped with plows, 93 sets of snow rollers, 93 drags, four sidewalk plows and 129 sleighs for use in snow removal.

The blowers are capable of casting snow 150 to 1,000 feet from the path of the machine, while the rollers and drags are used on landing fields to compress snow to a reasonably smooth surface to permit airplane landings and take offs.

Great Britain to Get 26 Long-Range Bombers and Sperry Bombsight

Release of 26 long-range bombers and the Sperry bombsight to Great Britain was recently announced by Gen. George C. Marshall, Army chief of staff.

Britain, Marshall declared, had received prior rights to delivery of 26 Consolidated B-24 four-engined heavy bombers and negotiations are in progress to give England similar priority on 20 Boeing B-17C "Flying Fortresses."

In return for the release of the Consolidated bombers, the British have agreed to send the U. S. sufficient engines to equip 41 "Flying Fortresses" upon which the government has already accepted delivery without engines, or would have received without engines by Jan. 1.

Marshall declared that the purpose of the bomber release was primarily to obtain an actual service test of the planes to enable the U. S. to make desired modifications in bombers now under contract for future delivery. To date, no American four-engined bombers have performed under war conditions. Air Corps observers, it is reported, are to be assigned to accompany the bombers to study their performance, supplementing the British findings.

The Consolidated B-24 weighs approximately 20 tons, has a cruising range of 1,500 miles and a speed of 300 mph. It carries a crew of nine, including three bombardiers and gunners, and four tons of bombs. The four, 18-cylinder Pratt & Whitney engines develop 1,200 hp. Wing span of the plane is 110 ft., fuselage length, 64 ft. and over-all height, 19 ft.

Delivery schedule calls for three in November, three during December and 20 between Jan. 1 and Mar. 1.

RCAF Reorganization Adds 2 to Air Council

Reorganization of the Royal Canadian Air Force Headquarters involving the creation of two new divisions and two new members of the Air Council has been announced by C. G. Power, minister of national defense for air.

Under the new setup, which is designed to decentralize the administration of the Commonwealth Air Training Plan and reallocates the responsibilities of the air member for organization and training and air member for engineering and supply, Air Commodore G. O. Johnson, formerly air member for organization and training, becomes deputy chief of the air staff, and Air Commodore Robert Leckie and Group Capt. S. G. Tackaberry become members of the Air Council for Training and Supply respectively.

General organization is now the responsibility of the deputy chief of the air staff, while all training activities are under the air member for training. The activities of the air member for engineering and supply will now be distributed between the air member for supply, Group Capt. Tackaberry, and Air Vice-Marshal E. W. Stedman, whose duties are concentrated as air member for aeronautical engineering.

Carlton Heads Auto Air Defense Group

Clarence C. Carlton, president of Automotive Parts and Equipment Manufacturers Inc. and vice-president of Motor Wheel Corp., Lansing, Mich., has been appointed permanent director of the Automotive Committee for Air Defense set up at the request of Defense Commissioner William S. Knudsen to coordinate automotive and aeronautical engineering experience and facilitate a large projected increase in the program for aircraft procurement.

William J. Cronin, secretary of the manufacturers' committee of the Automobile Manufacturers Association, has been appointed assistant director of the Automotive Committee at Carlton's request, while Maj. James H. Doolittle remains as Air Corps representative.

Off the Beam

MORE THAN 15 TONS of turkey were slaughtered for the airlines on each of the two Thanksgiving Days but, as on TWA's system, only the white meat was used to appease appetites of passengers. As in former years, the dark meat went to the kitchen personnel who prepared the feast.

DR. NATHANIEL F. SILSBEE, comptroller of Beaver College, is syndicating 600-word installments of "Aviation Angles" to various newspapers through the Ledger Syndicate of Philadelphia. Dr. Silsbee began writing the feature in Jan. 1940 for the Times-Chronicle, Jenkintown, Pa.

"SMILIN' JACK'S" cartoonist-creator Zack Mosley, soon will take delivery on a three-place Rearwin to replace the Piper Cub Coupe he's been flying for about a year. Mosley, whose cartoon strip is handled by the Chicago Tribune-New York News Syndicate, is a member of Sportsman Pilots Association.

C. B. ALLEN, former vice chairman of the old Air Safety Board, now writing special aviation material for the New York Herald Tribune, will write a page of news and comment on aviation for Western Flying, beginning with the December issue. He has accepted his new assignment in addition to the Herald Tribune job.

ADDED TO LYCOMING'S fleet of company-owned airplanes for executive travel, demonstration and experimental testing purposes is a new Waco Series E Aristocrat powered by a 300-hp. Lycoming. In addition to the Waco, the company owns a 226-hp. Stearman trainer, a 75-hp. Piper Cruiser, a 65-hp. Taylorcraft, a Stinson Reliant and a new Bellanca Cruisair.

WHENEVER A BLIND PERSON makes a reservation on Eastern Air Lines, the company's stockroom at New York City is immediately notified by radio or local telephone and three copies of Reader's Digest in Braille are sent to the passenger's city to be placed aboard the plane. EAL is a regular subscriber of the Braille edition and gets immediate delivery monthly from the printer at Louisville.

IT WAS OVER five years ago—on Nov. 22, 1935—that Pan American's famed China Clipper soared westward from San Francisco Bay on the first scheduled passage of an ocean by air. Sixteen days later her sister, the Philippine Clipper, surged up from the same spot. As aviation marked the anniversary, it found that these two Martin Leviathans had traveled the equivalent of six round trips to the moon.

ALTHOUGH REQUIREMENTS for U. S. air forces today make for more safety and possibly even better pilots than those turned out in 1917, it is interesting to note that had those rules been in force during the World War they would have eliminated at least two star American flyers. "Ace of Aces" Capt. EDIE RICKENBACKER and C. V. "Sonny" WHITNEY might have been shut out of the pilot category under those regulations. Rickenbacker was 27 when he entered the Air Corps, and Whitney started as an Army pilot when only 17 years of age. The present age limits are from 21 through 26.

Airport to Bar Landings by Planes Without Radio

Only aircraft equipped with radio for receiving traffic instructions will be permitted to land or take off at the East Boston Airport after Feb. 1, except in cases of emergency. Crocker Snow, director of the Massachusetts Aeronautics Commission, who issued the order, cited the "serious hazard caused by uncontrolled flying at airline terminal airports" as making the regulation necessary.

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Eastern Air Lines "GREAT SILVER FLEET" Flies With Goodrich . . .



'Eastern's' Expanding Service and Equipment Programs Again Include Safety of Goodrich Tires . . . DE-ICERS . . . E.T. Brakes

• This is the twelfth year in a row that Eastern Air Lines planes have flown with Goodrich Airplane Tires. It's the start of still another winter when The Great Silver Fleet will be protected by Goodrich DE-ICERS . . . another year when Goodrich E.T.* Brakes will help give the *Silverliners* smoother, safer landing and stopping.

Goodrich leadership in aviation is demonstrated year after year in the equipment programs of the world's

leading air lines, pilots and plane makers. Whether planes are built for one passenger or fifty, the call is for Goodrich Airplane Silvertowns . . . Goodrich DE-ICERS . . . E.T.* Brakes and over 40 other Goodrich Aviation Products. Get in touch by air mail with The B. F. Goodrich Co., Aeronautical Division, Akron, Ohio, for complete information.

*Goodrich Expander Tube Brakes are manufactured under license and sold by Hayes Industries, Inc., Jackson, Mich., and Bendix Aviation Corp., South Bend, Ind.

SAFE, SMOOTH STOPS for the *Silverliners* are accomplished with Goodrich Expander Tube* Brakes. When teamed with Goodrich Airplane Silvertown Tires, this combination produces the safest landing control for all planes, large or small.



A SILVERLINER GETS ITS "WINTER DRESS"

—Again this winter Eastern Air Lines mechanics will prepare The Great Silver Fleet for winter flying by attaching the Goodrich DE-ICER to wings. These huge pulsating rubber "shoes" crack and break ice from wing edges as fast as it forms. And propellers are protected by the Goodrich-developed "spinner" and "slinger ring" assembly that constantly bathes the blades with an ice-defying solution.



Goodrich Airplane Silvertowns THE SAFEST AIRPLANE TIRES EVER BUILT

Over 40 Rubber Products for Airplanes — including Tires — Tail Wheels — Abrasion Shoes — DE-ICERS — Matting — Rubber Hose — Grommets — Shock Absorber Cord — A Complete Line of Rubber Aeronautical Accessories.

Substratosphere Fighter Designed by de Seversky

Alexander P. de Seversky has been issued a patent for a single-engine pursuit plane designed to give the pilot greater visibility and increased firing power. Equipped with a tricycle landing gear, the plane has as many as four propellers and a sealed-in cabin to permit operation in the substratosphere.

The liquid-cooled engine is mounted in a cradle on the bottom of the fuselage directly behind and below the pilot. Two propellers are mounted in leading edges of the wings, while two pusher-type propellers giving extra lift for substratosphere flight are mounted in the rear. The two rear propellers may be folded up when not in use.

The patent shows six .50-caliber machine guns and one 37-millimeter cannon mounted in the nose and bullet-proof steel protecting the pilot. Speed of the plane is not revealed.

Selfridge, Bolling Expansions Announced by War Dept.

Construction projects at Selfridge Field, Mich., and Bolling Field, D. C., costing \$934,860 and \$895,250, respectively, have been announced by the War Dept.

The Selfridge expansion will increase housing and facilities to provide for garrison strength of 3,100 officers and enlisted men compared with present total of 2,000. Bolling garrison will be increased to 1,750, some 600 above present strength.

Army Air Trophies Given

Two trophies for safe flying in the Army Air Corps have been awarded to west coast units, according to the War Dept.

The First Wing of the GHQ Air Force, March Field, Cal., has been awarded the Daedalian Trophy for the second year for flying a total of 73,523 hours during the 1939 fiscal year with an accident rate of .272 per thousand flying hours; while the Columbian Trophy, presented by the Republic of Columbia to the group having the lowest accident rate, was won by the Seventh Bombardment Group, Salt Lake City, Utah, a unit of the First Wing.

Air Bases Strengthened

Contracts totaling \$20,269,385 for further construction to strengthen naval and air bases from the Caribbean to Alaska and the Pacific Islands have been announced by the Navy Dept.

New housing units make up the larger part of the projects at Honolulu and Pearl Harbor, T. H.; Kodiak, Unalaska and Sitka, Alaska; San Juan, Puerto Rico; St. Thomas, Virgin Islands; Guantanamo, Cuba; Alameda, Cal.; Quonset Point, R. I.; and Quantico, Va.

Col. Meyers Leaves CAA

Lt. Col. Paul D. Meyers, district airport engineer in charge of the New York and New Jersey territory, has left the CAA's airport section to accept an assignment as Lieutenant Colonel in the Wisconsin National Guard. His duties will be those of organizing and then commanding the 126th Observation Squadron of the Wisconsin National Guard, for which an armory will be built on Milwaukee County Airport.

Alameda Air Station Dedicated

The \$13,500,000 Alameda, Cal., Naval air station became a part of the navy shore establishment recently when Rear Adm. Arthur J. Hepburn, Twelfth Naval District commandant, placed the station under the command of Capt. Frank R. McCrary. Present complement of 250 bluejackets and marines will be increased gradually to a total of 35 officers and 600 men, with 700 civilians to be employed in servicing and repairing navy planes in the area.

Glenview Base Wins Trophy

The U. S. naval reserve aviation base at Glenview, Ill., has been awarded the Conway Trophy for general excellence in training, flying, mechanics and other phases of aviation.

Des Moines' Mile-Square Slogan Realized



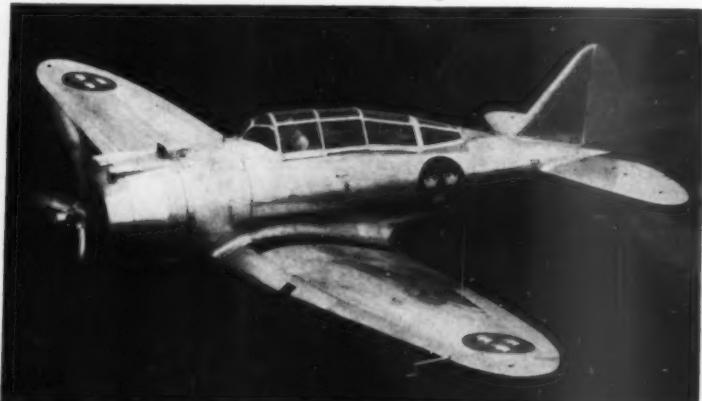
Des Moines' "A Mile Square Airport" slogan which was popularized locally several years ago has materialized. Here is a photo of the city's expanded municipal airport showing completed work on all runways. A National Guard air unit having been allocated to Des Moines, a hangar and shops will be built at the port soon. Mid-Continent Airlines and United Air Lines operate from the field.

A Ryan With Edo Floats



Pictured here is the first of the Ryan S-T training planes to be equipped as seaplanes for flight instruction of naval pilots. This STM-2 seaplane trainer and others like it are in volume production at Ryan Aeronautical Co., San Diego, for delivery to the naval aviation service of an undisclosed foreign government. For water flying, the Ryan is equipped with twin Edo floats, manufactured by Edo Aircraft Corp.

Guardsman in Flight



Close-up view of the Republic 2-PA fighter, known as the Guardsman, in flight near Republic Aviation Corp.'s plant at Farmingdale, N. Y. In this photo, the flexibly mounted rear gun can be seen. This is operated by a second member of the crew from the rear cockpit.

Air Corps Shifts Officers

Announcement of shifts in duty for three Air Corps officers, Brig. Gen. Follett Bradley, Brig. Gen. John C. McDonnell and Brig. Gen. Oliver P. Echols, has been made by the War Dept.

Gen. McDonnell, now in command of the 3rd Bombardment Group, Savannah, Ga., will head the 7th Pursuit Wing, Mitchel Field, N. Y.; Gen. Echols, now in command of the Air Corps Engineering School, Wright Field, Dayton, O., will be assigned to duty in the office of the chief of Air Corps, Washington, D. C., while Gen. Bradley will take command of the 13th Composite Wing in Puerto Rico.

Army Making Experiments With Warplane Camouflage

The Air Corps is reported to be experimenting with various color combinations designed to render warplanes invisible from above as well as from the ground.

Upper surfaces camouflaged with irregular patterns of green and brown simulating the color of the terrain below have been found to give the best results in deceiving enemy planes passing overhead, while a four-motored Boeing bomber with its undersurfaces completely covered with lampblack flew undetected through the beams of 800,000-candlepower searchlights in recent maneuvers.

Maj. Gaffney, Ladd Field

Commander, Visits Hamilton
Maj. Dale V. Gaffney, Army Air Corps, formerly of Hamilton Field, Cal., and

presently commanding officer of the Army's new Ladd Field at Fairbanks, Alaska, returned to the Bay area recently after a non-stop flight from Fairbanks to McChord Field, Wash. Maj. Gaffney's Boeing Flying Fortress completed the non-stop flight in eight hours, during most of which time he flew at altitude above 20,000 ft., encountering sub-zero weather, and at one point it was necessary to take his oxygen equipment even to 27,000 ft. to avoid storms.

The Fortress is one of a number of Army aircraft stationed at Ladd Field for winter tests, prior to the dispatching of regular Army flying units to the far northern station.



Maj. Gaffney

501st Parachute Battalion Formed at Fort Benning

Formation of the 501st Parachute Battalion at Fort Benning, Ga., with an approximate strength of 500 men has been announced by the War Dept.

Personnel now on duty with the Test Parachute Battalion at Fort Benning will form the nucleus of the new organization, with additional men to be taken from various regular army Infantry regiments.

Air Observers to Egypt

Two more military observers, Col. G. E. Brower and Maj. Demas T. Caw of the Army Air Corps, have arrived in Cairo, Egypt, to study desert aerial warfare.

The officers, who bring to four the total number of U. S. observers now in Egypt, arrived in Cairo following a 16-day airplane trip from Washington via Hong Kong.

Air Observers to Britain

Three U. S. Army Air Corps officers, Maj. Willis R. Taylor, Selfridge Field, Mich.; Maj. Robert W. Douglas Jr., Mitchell Field, N. Y.; and Capt. Frank A. Armstrong Jr., Savannah, Ga., at base, have been sent to London as observers of aerial warfare.

U. S. May Get Power Turret

The power-operated airplane turret which enables gunners to turn their fire in any direction is reported to have been made available to the U. S. by Great Britain.

London sources declare that while plans of the device may not have reached the U. S. Air Corps as yet, only technicalities stand in the way, and the production of the turret for American use may be expected soon.

Total Defense Commitments

Defense commitments approved by the present session of the 76th Congress totaling \$17,692,227,930 (AMERICAN AVIATION, Nov. 15, p. 4) include the following items: (1) Army, total direct appropriations and contract authorizations, \$8,792,145,145; (2) Navy, total direct appropriations and contract authorizations, \$3,571,138,137; (3) Civil Activities contributing to national defense and neutrality enforcement, cash and contract authority, \$776,944,648; (4) Long-range commitments for the two-ocean navy shipbuilding, estimated \$4,586,000,000. This breakdown of total appropriations and contract authorizations for defense purposes was released officially by Rep. Edward T. Taylor, chairman of House Appropriations Committee and does not reveal the amount earmarked for aviation.



Modern Pursuit for National Defense

with

*Curtiss
Electrics*



First off the field—the fastest planes in the air—pursuit aircraft have always been the most spectacular fighting units of aerial warfare. Each year these ships have grown more formidable and have attained new standards of speed and maneuverability.

The Curtiss P-40 illustrated above is the latest of a lineage of pursuit planes which extends back to 1922. Known to have a speed in excess of 350 miles per hour, it further distinguishes the well-known line of Hawks.

As a current advanced pursuit type of the Army Air Corps, the P-40, equipped with Curtiss Electric Propellers, is today in mass production for the strengthening of national defense.

CURTISS PROPELLER DIVISION
Curtiss-Wright Corporation • CALDWELL, NEW JERSEY



CURTISS *Electric*
PROPELLERS



In Peace or War

**NOTHING CAN REPLACE
OUR AIRLINES**

Total defense calls for total communications. In the air this means expansion of our airlines for maximum use as passenger, mail and cargo carriers. Now maintaining a vital service in speeding up production for defense, these wings of commerce can expedite military transport in any emergency. Already providing the world's finest, fastest transportation with Douglas equipment, our airlines can only be improved by aiding the expansion of their service. Your patronage can help. "It Pays to Fly." Douglas Aircraft Company, Inc., Santa Monica, California.

DOUGLAS  **FIRST AROUND
THE WORLD**
first in Airline Service

Gargantua

Over 9,000 drawings which would cover an area of four acres were required in the designing and building of the huge B-19 bomber being completed by Douglas Aircraft Co. for the Army Air Corps. Five hundred engineers, technicians and mechanics were employed on the craft, representing 700,000 hours of engineering time. Requiring four years from start of design to first flight of the 140,000-lb. giant, 42,500 hours of research and testing time and 1,250,000 hours of shop time were necessary. Upon completion of the craft, nearly 3,000,000 rivets will have been driven, and 10 miles of electrical wiring and two miles of control cable installed.

New Weather Building

The cornerstone of the new U. S. Weather Bureau building in Washington, D. C., was recently laid by Wayne C. Taylor, newly appointed under Secretary of Commerce.

The building, a five-story structure costing \$250,000, is expected to be ready for occupancy early in 1941. It will contain office facilities for administration, the station operations division, synoptic reports and forecasts personnel, the fiscal unit and an auditorium for conferences and lectures.

New Fairchild Gets TC

Fairchild trainer model M-62 B, equipped with Warner 165-hp. engine, has been assigned type certificate 724, the same TC under which the Ranger-powered version is approved, according to Fairchild Engine & Airplane Corp. announcement. The Fairchild trainer is extensively used by operators of the Secondary CPT Program and, it is reported, deliveries of the Army PT-19 are continuing at a rate of two daily.

Rhine Heads NAA Group

Bertrand Rhine, member of the California Airport Advisory Board, has been elected president of the southern California chapter of the National Aero-nautic Association to succeed Col. Joseph Marriott.

Other officers of the chapter include Gladys O'Donnell, first vice-president; Leonard Comegys, second vice-president; Larry Therkelson, secretary, and E. L. Hollywood, treasurer. Members of the board of directors are Warren Carey, Max Harlow, Caden Jenkins, Homer Merchant, Joe Plosser, Charles McReynolds and Leonard Schwartz.

Air Corps Acquires Ft. Logan

Fort Logan, Colo., will be turned over to the Air Corps Jan. 15 to serve as a sub-post of Lowry Field in training Air Corps administrative and technical clerks, according to the War Dept. Movement of the department of clerical instruction to Fort Logan will involve approximately 1,000 officers and men.

Curry to Head Air District

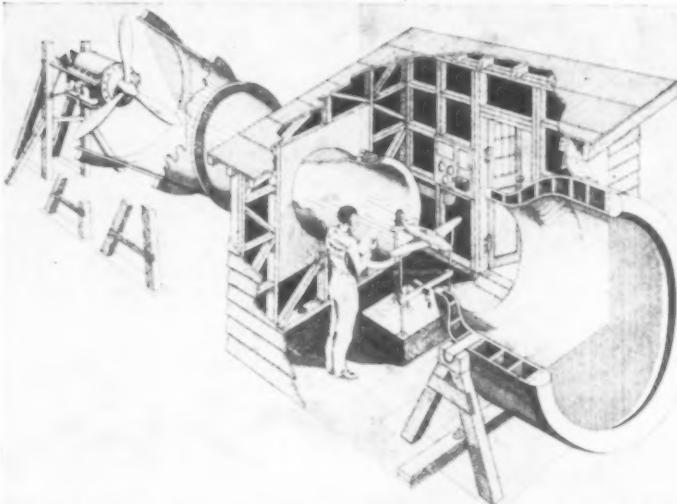
Brig. Gen. John F. Curry, now in command of the 10th Pursuit Wing, Hamilton Field, Cal., will be assigned to command the Northwest Air District, with headquarters at Spokane, Wash., according to the War Dept. Gen. Curry was recently nominated for promotion to Major General.

Expansion at McClellan Field

Construction of temporary buildings and other facilities costing \$147,970 at McClellan Field, Cal., has been authorized by the War Dept. Air Corps units to occupy the new facilities include the 62d Transport Squadron, headquarters of the Sacramento Air Depot and weather and communications personnel.

Army Testing Ryan PT-20A

The Ryan PT-20A primary trainer is now undergoing tests at Wright Field, Dayton, O., according to the War Dept. The new plane is similar to the PT-20 in all respects except for the substitution of a Kinner, five-cylinder radial engine developing 125 hp. at 1925 rpm. for a Menasco engine.

California Flyers Plan Wind Tunnel

A wind tunnel large enough to test model airplanes and aircraft parts is being planned by students of California Flyers School of Aeronautics, Inglewood, Cal. When completed, the tunnel will be used for the instruction of students in aeronautical engineering. The project is entirely in the hands of the students under the supervision of school instructors.

Exclusive**Revised****Current Figures on Backlogs,
Production Areas and Employment**

The following exclusive figures have been compiled by the staff of AMERICAN AVIATION ASSOCIATES and were gathered from numerous reliable sources. Backlog figures, in many cases, are estimates, and others, because of Army or Navy restrictions, are unofficial but are believed to be as accurate and as current as any on record:

Company	Backlog	Production Area Sq. Ft.	Employees
Adel Precision	\$750,000	36,000	.....
Aero Corp.	169,000	.....	.....
Aeronautical Corp.	750,000	.....	.....
Aeronautical Products	1,000,000	.....	.....
Aircraft Accessories	1,600,000	46,000	400
Allison	56,000,000	.....	9,000
Beech	22,360,000	181,500	1,769
Bell	65,229,245	430,000	3,500
Bellanca	2,500,000	70,000	190
Boeing	184,000,000	1,400,000	7,700
Brewster	100,000,000	884,000	6,000
Cesana	11,000,000	225,000	600
Consolidated	328,842,000	1,900,000	12,275
Continental Motors	52,000,000	.....	3,000
*Curtiss-Wright Corp.	409,252,588	.....	.....
Curtiss Aero	.....	765,000	9,000
Curtiss Propeller	.....	590,000	2,500
C-W St. Louis	.....	179,000	2,000
Douglas	350,000,294	1,500,000	18,953
Ebo	.....	70,000	.....
Fairchild Aircraft	9,690,760	97,136	1,120
Fairchild Aviation	5,662,071	.....	.....
Fleetwings	7,500,000	200,000	1,100
Ford	131,323,020	.....	.....
Grumman	20,263,340	.....	2,000
Hardman Aircraft Products	700,000	.....	.....
Harlow	.....	30,000	55
Jack-Heintz Ltd.	3,000,000	.....	.....
Kellett	1,000,000	175,000	1,500
Kinner Motors	700,000	40,000	150
Liberty Aircraft Products	1,750,000	.....	.....
Lockheed	280,025,373	.....	12,258
Luscombe	100,000	42,000	371
Lycoming	15,400,000	380,000	1,150
Martin	322,255,396	1,250,000	12,867
Menasco	4,000,000	43,000	700
Monocoupe	130,000	22,500	35
North American	230,000,000	740,000	6,545
Northrop	24,117,586	216,280	1,450
Packard	187,448,000	.....	.....
Piper	1,000,000	125,000	1,150
Porterfield	325,500	32,000	150
Pump Engineering	.....	.....	330
Ranger Engines	7,500,000	100,000	380
Rearwin	150,000	.....	.....
Republic	68,000,000	228,000	2,600
Rohr Aircraft	750,000	.....	250
Ryan	11,400,000	180,000	1,400
Solar	3,750,000	111,800	635
Spartan	1,859,880	.....	.....
Stearman	14,000,000	205,000	1,300
Taylorcraft	372,000	72,000	347
United Aircraft Corp.	663,029,332	.....	.....
United Aircraft Products	1,633,612	.....	.....
Timm	1,047,639	.....	140
Vega	31,000,000	.....	2,207
Vultee (includes Stinson)	85,027,792	550,000	6,100
Waco	.....	98,960	657
Warner Engines	1,000,000	33,000	140
Wright Aero	356,538,713	2,733,000	14,000
TOTAL	\$4,072,902,847	15,981,176	149,074

* Exclusive of Wright Aeronautical.

Census Reveals Industry**Gains Before Defense Boom**

Rapid growth of the aircraft manufacturing industry in the U. S. even prior to the 1940 expansion stimulated by the defense program is indicated in preliminary figures compiled from returns of the census of manufactures for 1939 and released by Bureau of the Census, Department of Commerce.

Factory value of the products of 125 plants manufacturing aircraft, gliders, balloons, parachutes, and plane parts, such as engines, propellers, blades, and pontoons, was \$279,466,844 in 1939, an increase of 86% over the \$149,699,756 reported for 105 factories in 1937.

For census purposes, establishments primarily engaged in the manufacture of aeronautical instruments and electrical equipment are not included in the aviation industry.

Wage earners principally engaged in manufacturing aircraft and parts in 1939 numbered 48,637, up 60% over the 30,384 for 1937, while value of the 1939 wages, \$77,488,188, exceeded the 1937 figure of \$43,826,910 by 76%.

Cost of materials, supplies, fuel, purchased electric energy, and contract work increased 70% from \$56,556,229 in 1937 to \$96,250,233 in 1939. Value added by manufacture jumped 96%, from \$93,143,527 to \$183,246,611.

Machine Tool Committee to Coordinate Demands

Establishment of a Machine Tool Priority Committee to coordinate national defense, commercial and export demands on the machine tool industry was announced in mid-November by the Priorities Board.

The committee, composed of representatives of the industry, the Army-Navy and Defense Commission, will formulate policies governing operation of the voluntary preference rating system, now in effect, as it applies to machine tool contracts.

Air Corps Projects Set

Construction projects totaling \$10,076,565 for administration buildings, barracks and other facilities at new Air Corps stations at Portland, Ore.; Tallahassee, Fla.; Augusta, Ga.; West Palm Beach, Fla.; Fort Wayne, Ind.; and Oklahoma City, Okla., as well as additional units at MacDill Field, Fla.; March Field, Cal.; and Drew Field, Fla., have been announced by the War Dept.

New Air Base Site Justified

Necessity for protecting central California's oil fields and provision for an operations center for repelling aerial attacks from the sea have been cited by Maj. Gen. J. E. Flickert as primary factors in the selection of Fresno, Cal., as the location of a new Air Corps bombardment base. Federal authorities are planning 10 additional aviation training schools and 10 civilian contract training units in the area. Gen. Flickert declared.

Cook to Command Patrol Force

Rear Adm. Arthur B. Cook, former commander of the U. S. Navy aircraft scouting force, has been assigned to duty as commander of the fleet's aircraft patrol force, with additional duty as commander of Aircraft Carrier Division Three.

Cook was chief of the Navy Bureau of Aeronautics from 1936 to 1939.

Air Corps Gets 'Airacuda'

Delivery of the first Bell YFM-1A "Airacuda" to Wright Field, Dayton, O., has been announced by the War Department. A refinement of the YFM-1, the new five-place fighter is equipped with retractable tricycle-type landing gear and two liquid-cooled Allison engines mounted with pusher-type propellers.

RAF Pilot Age Limit Raised

Upper age limit for experienced pilots for operational flying duties and for candidates for entry into Royal Air Force pilot training has been raised from 28 to 31 years, according to the British Embassy. The upper age limit for candidates for air crew, as distinct from pilot duties, remains at 32 years.



AIRESSEARCH AFTERCOOLERS INSURE PASSENGER COMFORT IN P.A.A. STRATO-CLIPPERS

With new Boeing 307 Strato-Clippers, Pan American Airways System cuts two days off former schedules by flying "upper levels" to Rio de Janeiro and Buenos Aires. High above mountainous areas and surface weather, passengers travel through rarefied atmosphere in absolute comfort due to an automatic temperature and pressure control system that recreates natural low level atmospheric conditions. Important to this system are Airesearch Aftercoolers which cool compressed air to proper temperatures for passenger comfort. Built of high tensile strength aluminum alloys and weighing only 15 lbs. each, including control valve, these aftercoolers represent an important advance in weight reduction and high performance at "low pressure drop." This development is typical of the service offered by Airesearch—an organization whose personnel, facilities and resources are without a peer in the increasingly important heat transfer field.



AIRESSEARCH MANUFACTURING CO.

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Pan American's 3-Day Flight to Rio Is Good—But It's Too Darn Good

Editor Reports the Strato-Clipper Whisks You to Brazil's Capital So Swiftly and So High That It's Just a Soft Cloud Trip—
But Why Complain?

(This is the first of a series of articles on a trip through South and Central America on Pan American)

By W. W. P.

THREE are times when air transportation seems just a little too good and too fast. I say this with my tongue in my cheek because, after all, a three-day flight from Miami to Rio de Janeiro, Brazil, is something to rave about. But the bare fact is that the trip is so doggone fast that I don't know any more about the Caribbean than I did before I left Miami southbound.

When W. I. Van Dusen, Pan American Airways' director of public relations, asked me on 10-days' notice if I wanted to take a looksee at Pan American Airways, departing from Miami Oct. 2, I jumped at the chance. I got out maps, studied the air routes, and thought for once I'd find out about those islands that lie between Florida and South America.

It didn't turn out that way at all. I boarded the Boeing 307 Strato-Clipper at Miami Municipal Airport just before 8 am. on Oct. 2, and not until I was deep into Brazil two days later did I get to find out what was on the ground. That Strato-Clipper just flies and flies, high above water, clouds and ground and before you know it you're south of the equator and "down under" in Brazil.

Of course the Strato-Clipper has to come down once in awhile. You even spend two short nights in strange places far from home. But on the whole it's an amazingly comfortable, swift journey above the clouds with miles rolling off at three a minute and more and pretty soon you're dumped out in the most beautiful city in the world. You feel just as far away from the U.S.A. as you really are, but you've gotten there with remarkable rapidity and you've seen practically nothing en route.

I've heard many stories of the clipper route to Rio, the 4 o'clock risings in the morning, the long, tedious days of flying, the frequent stops, and the week required to go from Miami to Brazil's fantastic capital. It was no pleasure jaunt in those days. Travel was tiresome despite the interesting islands and over-night stops. By the time the passengers arrived at Rio they really had been traveling—and they had seen things on the way.

New Service is Fast

That's all changed now, unless you still want to take the water route around Brazil's east coast. The new route is fast and furious but it's anything but tiresome. It's not only 1,000 miles shorter by the new Brazilian cut-off, but the Strato-Clipper travels about twice as fast as the water clippers. For one who had never been south of Havana, the trip was too good, too fast. But who can really complain about that? Rio was worth getting to quickly.

It used to be the Clipper route to Rio. Now it's a landplane route, and PAA calls the four-engine Boeing 307 a Strato-Clipper for old times' sake. Having flown on

TWA's first pre-view transcontinental flight with its Stratoliner, I felt quite at home in PAA's sister ship. It's spacious, comfortable, and smooth flying.

If a trip to Rio five years ago was too tiresome for comfort, the trip today is too tiresome because it's too simple and too easy. In all frankness, I hadn't expected to be whisked all the way to Rio with such complete rapidity. There is no adventure to it as far as the passenger is concerned—not unless you call a flight from New York to Los Angeles an adventure. It's just plain good modern air transportation.

But let me give you some details of this new 2-day-and-7-hour schedule to Rio:

The Boeing takes off from Miami with 16 passengers, far under the 33 for which there are seats, but as many as can be carried on the long hops—and you'll see later on what I mean by long hops. First leg of the flight is to San Juan, Puerto Rico, 1,134 miles, and that's quite a jump. We not only had a ham and egg breakfast on board, but a sumptuous lunch which started out with crab meat and onion soup and moved on to roast pork, vegetables and ice cream.

On that flight, equivalent to a run from New York to Kansas City, we flew high, so high that there wasn't much to see from the windows except water, clouds, and a few fleeting glimpses of islands. The stop at San Juan was brief, just time enough for a daiquiri or two, and on we went, headed for Port of Spain, Trinidad. This hop wasn't quite as long, but even so it was almost dark by the time we arrived at this British possession. Here was our first introduction to the tropics and a delightful one it was.

Jitters From Taxis

PORT of Spain's airport is 21 miles from the city. It isn't the flying that makes a South American trip give insurance men the jitters—it's the taxi rides to and from the airport. Trinidad is no exception. But we lived through it. Accommodations at Port of Spain are good, since Pan American persuaded the management of the Queens Park Hotel, with a little financial aid, to build a modern addition.

From Miami to Port of Spain in one daylight hop was a thrill, but perhaps not as much a thrill to an aviation man as the next day's non-stop flight of 7½ hours from Trinidad to Belem, Brazil, at the mouth of the Amazon. If I am going to spend over seven hours non-stop in a plane, I don't know of any nicer ship than the Boeing 307. On this trip, because of its length, we had only 11 or 12 passengers, which made it a de luxe aerial cruise with lots of room to move around.

For over seven hours we flew high over the coast of Venezuela then the three Guianas, and then came down low to fly across that amazing spectacle—the mouth of the Amazon. There were jungles to be sure, but the surprise was to find excellent pasture land with great quantities of cattle on the large island just before we reached Belem, all this right on the equator.

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Boston-Maine Airways Changes Name

Directors of Boston-Maine Airways, Inc., voted Nov. 19 to change the name of the company to Northeast Airlines, Inc., and filed notice of the change with the Civil Aeronautics Board Nov. 20. The company operates between Boston and Caribou, Maine, and between Boston and Montreal, Canada.

impressed by how far one can go, and so high, without seeing any country—not until we flew low before coming into Belem's airport. The stop at San Juan wasn't really a transition into the land of the Latinas, but Port of Spain was. Here I was, on the end of the second day's flight, below the equator with only one stop out of Miami that could be called interesting.

Cool Nights at Belem

Belem is a tropical city, but despite its proximity to the equator (of about 40 miles), it has cool nights. The hotel was passable, certainly satisfactory for a one-night stand. The food was reasonably good, and the ice cream served in the sidewalk cafe was excellent. Arrival about 4 pm. gave a few daylight hours to see the town. Early the next morning we were off, and this was one of the few pre-dawn awakenings of the entire South American trip.

The Strato-Clipper operates only to Belem, Brazil. From Belem to Rio, less than a day's hop across the new cut-off route, Douglas DC-3 service is operated. Twice a week the Boeings leave Miami for Trinidad and Belem; on a third day a Sikorsky clipper flies to San Juan for over-night stop and passengers continue from that point to Belem on the Boeing. It's a confusing schedule but PAA has only three Boeings and one of these keeps busy operating between Miami and Cristobal. The other two shuttle back and forth between Miami and Belem.

There has been a general belief that the cut-off route straight across Brazil is over jungle. This isn't true. It's delightful flying country. Perhaps a hundred miles, at most, are over the Amazon jungle regions, the remainder of the journey is over country very similar to that of New Mexico—arid plateau country with some farming. There aren't mountains and the plateaus aren't over a few thousand feet high at most, but it's anything but jungle land. Ant hills are seen in great profusion at one point and there are very few people living in this part of the interior.

I found sleeping or reading much more interesting than looking out the window, for the scenery isn't distinguished. And the DC-3 just plugs along mile after mile as smoothly as silk. Ever so often I pinched myself to make myself realize that we really were a long, long way from populated country.

3 PAA Landing Fields

Pan American has three landing fields to use on the cut-off route, one of which is a story in itself. A second was already in existence at Pira Pora, and the third is an emergency field near Carolina, a small town in northern Brazil settled long ago by settlers from the U. S. who didn't like the way things were going up here. The distance between Belem and Rio is 1,400 miles. PAA has one scheduled stop, at Barreiras, exactly halfway. The Carolina field and Pira Pora are about mid-way in each segment.

When schedules are functioning perfectly, passengers reach Rio in mid-afternoon on the third day out of Miami, quite a contrast to the old

Clipper schedules around the east coast. On my trip the weather in Rio wasn't so good, so after refueling at Barreiras, we flew on to Pira Pora for overnight, about 400 miles north of Rio by air or 1,000 miles and three days by railway, Pira Pora being the end of the rail line.

But before getting into that, I want to relate the story of Barreiras in the event that you haven't already read Bill Van Dusen's description of it in his "Dear Señor" letter. For the story of Pan American's airport at Barreiras is one of the milestones in the development of air transportation. But that's in the next installment. (To be continued.)

Along the Lines

Electras Replace Stinsons for Northeast—Faster airplane service between Boston and points in Aroostook County, Me., and resumption of landings at Presque Isle were affected by Northeast Airways recently, when Lockheed Electras replaced tri-motored Stinson planes on company's route to Caribou. Because of airport construction at Caribou and Presque Isle fields, it may be necessary on some trips to make a single landing at either Caribou or Presque Isle for passengers destined to either point, Paul F. Collins, NEA president, has announced.

Baltimore Becomes Terminal for PAA—Bermuda Service—Pan American Airways, in accordance with its customary winter operating procedure, has shifted its terminal for Bermuda service from La Guardia Field to Baltimore airport. Nothing has yet been announced about transfer of the trans-Atlantic operation, but shift of that service to Baltimore is expected with the advent of unfavorable winter flying weather in the New York area.

PCA to Employ 50 Hostesses in 1941—Prediction that 1941 will be a boom year for prospective air hostesses has been offered by J. J. O'Donovan, vice president of Pennsylvania-Central Airlines: "We are placing 10 new airliners in service next spring and that will create more than 25 positions in our air hostess department. . . . I think it's safe to predict that our company alone will employ 50 girls as air hostesses during 1941." PCA policy is to hire girls with at least two years' college training, but not to require nurse's certification.

New Hangar for Delta

City council finance committee of Atlanta, Ga., has approved expenditure of \$50,000 for erection of a new hangar at municipal airport for use of Delta Air Corp. Delta will also supply \$50,000 for the hangar which it will lease from the city for 20 years at \$2,500 a year. It is reported.

Gravelly Runway Ready

Though the new Washington National Airport at Gravelly Point will be available Dec. 15 for emergency landings, formal dedication will not be until next spring. Col. Sumpter Smith, chairman of the Inter-Departmental Engineering Commission, said Nov. 16. The 6,850-ft. main runway is reported completed and ready for use.

AA LaGuardia Base Filmed

American Airlines has reported production of a motion picture in natural color showing the line's offices and shops at LaGuardia Field, New York City. All phases of operation and shopwork are shown in the film, including complete overhaul of a plane from the time of entering the overhaul base until it is returned to operation.

HANDCUFF FIRE!



YOU can snuff out an engine fire as easily as you can switch on your radio . . . if your plane has the right protection . . . if you have built-in extinguishers.

LUX built-in carbon dioxide fire extinguishers snap off engine blazes in split-seconds. Just yank the LUX release and flood the motor compartment with a fast-expanding cloud of carbon dioxide snow-and-gas. Fire lives about 3 seconds! Yet the fire-killing gas . . . clean, dry, non-toxic . . . can't harm motor or equipment.

This is the way the airlines handle fire protection. The slender metal ring surrounds the engine, covers it in a flash with a blizzard of LUX gas. Directional valves permit one LUX cylinder to protect several motors on multi-engined planes.

LUX gives fast-moving, sure protection against engine fires. More airliners, more private planes, more U. S. Army and Navy planes are protected by LUX than by any other type of built-in fire extinguisher.

Free brochure, "White Magic," describes LUX built-in extinguishers, also LUX portables for airplane cabin or hangar protection.

Write today for your copy.

Walter Kidde & Company, Inc.
1239 West Street

Bloomfield, N. J.



100 PILOTS WANTED

by

UNITED AIR LINES



Expanding operations require a large increase in pilot personnel during the next six months. Applicants must have Commercial Certificate and Instrument Rating. Those who are selected will receive special training in Instrument Flying on transport planes. Rapid promotions. You should be between 23 and 35 with two years of college or its equivalent. Address your application to R. T. Freng, Director of Flight Operations.

UNITED AIR LINES
Municipal Airport

Chicago, Ill.

Remember When . . .



Remember when it took the huskiest boys on the field to "wind 'er up" on a cold day? Human energy, stored in a flywheel, started the engine.

Today the Breeze Cartridge Starter* develops smooth, powerful torque at the touch of a switch . . . will do it repeatedly, at any temperature . . . on the largest engines built. The Breeze Cartridge Starter is as modern as today's airplane.

*Manufactured under the Coffman patents.

BREEZE
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Breeze
CORPORATIONS
NEWARK NEW JERSEY INC.

New Feeder Airline Plans Network of 8 Routes in South and Midwest

Plan for a network of eight feeder routes crisscrossing the southeast and midwest was revealed by Southwest Feeder Airlines Inc., organized Nov. 9 under Delaware laws, in notice of intention to file application received by the Civil Aeronautics Board, Nov. 13.

Notice was filed for the new \$625,000 company by Clinton M. Hester, Washington attorney and former administrator of the Civil Aeronautics Authority, who indicated that the company would seek permanent authorization for transportation of persons, property and mail, including use of the air pickup method, among 82 cities and towns in Oklahoma, Texas, Kansas, Missouri, Iowa and Illinois.

The system proposed includes: Route 1, Oklahoma City, Okla., to Ft. Worth-Dallas, Tex., via Duncan, Lawton, Altus, Vernon, Electra, Wichita Falls, Ranger, Mineral Wells, and other points; Route 2, Houston, Tex., to Tulsa, Okla., via Lufkin, Henderson, Marshall, Tyler, Paris, Hugo, McAlester, Okmulgee, Muskogee, and other points; Route 3, Brownsville, Tex., to Houston, Tex., via McAllen, Rio Grande City, Laredo, Eagle Pass, Del Rio, Brackettville, Uvalde, San Antonio, Cuero, and other points; Route 4, Wichita, Kan., to Tulsa, Okla., via Blackwell, Ponca City, Bartlesville, Coffeyville, Joplin, Miami, Claremore, and other points.

Route 5, Wichita, Kan., to Kansas City, Mo., via Newton, Hutchinson, McPherson, Salina, Junction City, Manhattan, Topeka, Lawrence, and other points; Route 6, Kansas City, Mo., to St. Louis, Mo., via Ft. Scott, Pittsburg, Joplin, Springfield, Lebanon, Jefferson City, and other points; Route 7, St. Louis, Mo., to Chicago, Ill., via Belleville, Centralia, Salem, Greenville, Springfield, Decatur, Urbana, Champaign, Bloomington, Peoria, La Salle, Joliet, and other points; Route 8, Chicago, Ill., to St. Louis, Mo., via Aurora, Rockford, Freeport, Dubuque, Clinton, Davenport, Moline, Rock Island, Muscatine, Burlington, Quincy, and other points.

Keith Kahle, Oklahoma City aviation writer, is western representative in charge of the company's office located in Ramsey Tower Bldg., Oklahoma City. Frederick A. Ballard, Washington attorney, is associated with Hester as counsel for Southwest.

Airlines' Arbitration In Effect Full Year

For the first time in the industry's history, 15 of the nation's largest domestic air transport companies have operated a full year under an arbitration agreement calling for settlement of disputes without recourse to courts, according to C. V. Whitney, ranking officer of the American Arbitration Association and Pan American Airways board chairman.

Under an agreement signed by the airline companies in Nov. 1939, all questions of trade practices were considered by arbitration tribunals throughout the country set up by the association.

The arbitrators in no way supplanted the jurisdiction of the Civil Aeronautics Authority, Whitney declared, but considered problems dealing with agreements for mutual use and facilities, restrictions for questionable advertising terms and practices, standardization of flight procedure regulations concerning non-scheduled flights and maintenance of adequate schedules.

Col. Edgar S. Gorrell, president of the Air Transport Association of America, said the agreement gave the arbitration boards the power to interpret inter-carrier agreements, even though no actual dispute has arisen, thereby tending to eliminate the rise of controversies.

TWA Offers \$225,000 for Marquette Route Under New Agreement

If granted CAB permission, Transcontinental & Western Air will purchase Marquette Airlines for \$225,000 instead of \$350,000 as previously planned, according to terms of a new agreement recently filed with the Board. Marquette and John McKelvy, Pittsburgh financier and Marquette backer, have agreed that the purchase price shall be \$225,000 "exclusive of all sums heretofore paid to McKelvy" by TWA under former agreement dated Oct. 6, 1939.

The CAB last July 3 denied TWA permission to buy Marquette for \$350,000, stating that the price was excessive and not in the public interest, asserting "as if it were a speculative security to be sold by the holder to the highest bidder." (See AMERICAN AVIATION, July 15, p. 23.) With the filing of the new agreement, the CAB has ordered the case reopened to receive further evidence and to consider results experienced by TWA in operation of the Marquette route since Aug. 15.

The new terms indicate agreement between the parties that no deduction shall be made from the \$225,000 purchase price for the \$15,000 book value of airplanes which Marquette has sold since Aug. 15 for aggregate sales price of \$10,000. In addition to the \$225,000, TWA shall pay to McKelvy \$10,000 in cash, on the closing date, to be used and applied by McKelvy in reduction of certain Marquette liabilities required to be paid by McKelvy under the Oct. 6, 1939, agreement.

New CAB Examiner

Berdon M. Bell is a new examiner with the Civil Aeronautics Board.

To Serve Army Posts

The eight routes linking the smaller cities in the six-state area with centers having trunkline air service would, in addition, connect army posts in the southwest and midwest with main airline arteries as an adjunct to the national defense program, it is pointed out.

Aim of the proposed feeder operation is to provide early morning transportation of mail, passengers and property to smaller cities from major terminal points, with an afternoon schedule providing service connecting with evening and night flights of existing carriers. Through transportation of passengers is not planned.

Although twin-engine planes are to operate along the routes, points lacking proper airport facilities would be given air mail and express service with single-engine craft specially equipped with air pick-up and delivery devices.

"Southwest Feeder Airlines is adequately financed and fully prepared to operate all eight routes with the most modern equipment suitable for this type of operation," Hester stated at Washington. "There are 15 stockholders in the company any one of whom is able to handle the entire project with his private capital. The service we propose will bring to the important southwest and midwest regions airline service for which there has been an ever increasing serious need and demand."

Company Officers

Officers of the company are Oliver Payne, president, and I. W. Burnham, II, secretary-treasurer. Payne is chairman of the board of Liberty Aircraft Products Corp., Farmingdale, L. I., and member of McNaughton & Douglas, law firm at 40 Wall St., New York City. Burnham, of 30 Pine St., New York City, is vice-president of Consolidated Copper Mines Co., Kimberly, Nev.

Keith Kahle, Oklahoma City aviation writer, is western representative in charge of the company's office located in Ramsey Tower Bldg., Oklahoma City. Frederick A. Ballard, Washington attorney, is associated with Hester as counsel for Southwest.

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GEORGE CUSHING SUCCEEDS HIGGINS

Named Delta Operations Manager;
Was With Eastern Air Lines
Prior to 1935



George R. Cushing

Appointment of George R. Cushing as operations manager for Delta Air Lines, succeeding the late Patrick L. Higgins, has been announced by C. E. Woolman, vice-president and general manager of the company.

Capt. Cushing is a World War veteran, having been commissioned officer in the 10th Infantry of the 28th Division. He was wounded in action and returned to the U. S. in 1918. In 1927 he became connected with Pitcairn Aviation Co., in which organization he ultimately became chief dispatcher and a reserve captain on the New York-Atlanta run. In 1929, he became connected with Eastern Air Transport, which had purchased Pitcairn, as superintendent of the southern division with headquarters in Miami.

In 1932 Capt. Cushing was promoted to vice-president and general superintendent of Eastern, leaving this position in 1935 to become captain for Delta on the Atlanta-Ft. Worth division. In 1937 he was made chief pilot.

"In view of Capt. Cushing's splendid background and experience, he is eminently qualified to assume the responsibilities of the position to which he has been promoted," Woolman said.

Eminently Qualified'

Higgins, who died Oct. 6, was vice-president of Delta. He had been ill about five months. He started his aviation career with Curtiss Airplane and Engine Corp. in Buffalo, 1916, and was in service with the U. S. Marine Corps following outbreak of the World War in 1917 as flight instructor, holding the rank of 2nd Lieutenant. He returned to the Curtiss company in 1919, and later purchased a plane of his own for commercial activities in the south. In 1928 he was placed in charge of the flying school owned by Menefee Airways in New Orleans and was associated with the late Jimmy Wedell, noted speed flyer and designer of racing aircraft.

Becoming chief pilot for Delta in Mar. 1929, he became operations manager in 1934 and vice-president and a director in 1939. A native of Buffalo, he was 46 years of age at the time of his death. He is survived by his wife, a son, Donald, and a daughter, Patricia.

Eastman

(Continued from page 1)

all types, able to give the public any kind of service it wants and utilizing every means of carriage singly or in combination as the demands of economy and efficiency may require."

High Batting Average

During the first year of its operation, Trans-Canada Air Lines completed the highest percentage of scheduled flights of any line on the continent, according to a recent press announcement. Since the beginning of scheduled transcontinental passenger flights on TCA over 19 months ago, the line has had no fatal or serious operations accident.

All American Opens Last Link in 5-Route System

When All American Aviation Inc. opens its air mail pick-up link between Pittsburgh and Williamsport, Pa., via 11 intermediate points, Dec. 2, its entire system of five routes will be in operation, covering 143 cities and towns in Pennsylvania, New York, Ohio, West Virginia, Delaware and Kentucky. Richard C. du Pont, president, announced Nov. 15.

Intermediate points on the Pittsburgh-Williamsport segment are Pitcairn, Vandegrift, Indiana, Punxsutawney, DuBois, Clearfield, Philipsburg, State College, Bellefonte, Lock Haven and Jersey Shore, all in Pennsylvania.

Newark's Mayor Announces Plan for Reopening Airport

Newark Airport will be reopened under city control and managed by an executive chosen jointly by the airlines using the field and the municipality, according to a plan recently announced by Mayor M. C. Ellenstein. The airlines will guarantee sufficient revenue to run the field without help from the city, Ellenstein declared.

In proposing the new set-up, the mayor announced that a \$116,000 fund subscribed for the reopening of the field will be returned to the contributors as the airport will not be operated by Gov. A. Harry Moore's committee which had formed a non-profit company for the purpose.

TWA Promotes Gress

C. A. Gress, chief statistician for TWA, has been appointed assistant treasurer, according to E. Lee Talman, vice-president and treasurer of the airline.

Gress, who has been with TWA since 1929, will be in charge of preparing statistical material for use in hearings before the CAB.

TCA Has Record Traffic

Several all-time traffic records are reported by Trans-Canada Air Lines for the first eight months of 1940. Passengers carried to the end of August totaled 34,043, compared with 21,569 for entire 1939, the previous high mark. Express amounting to 62,928 pounds for the first eight months, contrasts with 24,566 for same period of last year, and 45,819 for calendar 1939. Mail poundage was 421,595, against 276,398 for corresponding period a year ago.

Urquhart's Position

In the Nov. 1 issue of AMERICAN AVIATION on page 6 it was erroneously stated that J. O. Urquhart is assistant to J. J. O'Donovan, vice-president in charge of traffic of Pennsylvania-Central Airlines. Urquhart is assistant to Edward Sullivan, general traffic manager of the line.

PAA Shifts Capital Offices

Pan American Airways has announced the separation of its sales and executive offices in Washington. Offices at 1109 Connecticut Ave., formerly occupied by both departments, will now be used exclusively for sales under Lowell Lee, district sales manager; while Mrs. Anne Archibald has opened executive offices in the Bowen Bldg., 815 15th St., N. W.

National Airlines Buys Uniforms
Russell Uniform Co., New York, N. Y., has received a contract to make new pilot and ground personnel uniforms for National Airlines Inc.

Moffett Again Heads ATA of Dominion

R. J. Moffett of Montreal, president of the Air Transport Association of Canada since formation of the organization six years ago, has been reelected president for another year.

W. B. Burchall of Ottawa was reelected executive secretary, and Walter Deisher of Ft. Erie, Ont., was added to the board.

Others elected are R. W. Starratt, vice-president; James Young, honorary treasurer; W. Leigh Brintnell, G. A. Thompson, R. B. C. Noorduyn and W. F. English, directors.

AA Names J. Parker

As Display Manager

Appointment of Jerome Parker as display manager for American Airlines has been announced by Charles A. Stevens Jr. of the advertising department.

Parker has for 18 months been creator of a series of window displays at American's ticket offices in New York City, and since 1936 his displays have appeared in the year book, "Display Animation."

His headquarters will, for the present, be located in American's New York district sales office.

Oelke Goes to 'Sun Country' As Special Representative

Merle J. "Olie" Oelke, cameraman for American Airlines, has been appointed special publicity representative in the southwest "sun country."

Oelke will have headquarters at Tucson, Ariz., during the winter months and will work out of both Tucson and Phoenix, according to Edward G. Bern, director of publicity.

William K. Lawton, formerly with Standard News Association, has joined American's publicity staff in New York, Bern stated.



The Fastest WAY HOME

To get you home faster—and back sooner America's Fastest Airline brings you spacious new Super-Lodestar. When you travel to or through Colorado and the Southwest—Fly Continental—add hours, even days to your holidays.



America's
CONTINENTAL
Fastest
AIR LINES



Fly the Skyway Closer to the Sun—between CHICAGO and NEW YORK

Fly the fastest, smoothest non-stops between Chicago and New York—TWA's 4-Engine Stratoliners! It's only 3 hours 33 minutes from Chicago to New York—4 hours 21 minutes from New York to Chicago, when you fly the Route of the Stratoliners! 4 non-stops every day, each way, including 3 Stratoliners. Seven other fast flights, with connections for all the east and west.

Information, Reservations:
Call Your Travel Agent or
TWA Representatives Everywhere



ROUTE OF THE STRATOLINERS

TRANSCONTINENTAL & WESTERN AIR, INC.

AIR CARRIER RECORD

(C. A. B. Applications, Hearings, Dockets)

Northwest Rate Hearing Held

Hearing was held before CAB Examiner Thomas L. Wrenn, Nov. 12, on setting of mail rate for Northwest Airlines' recently opened AM-45, Twin-Cities to Duluth. Although NWA did not ask a specific rate, the company estimated that it will need at least 30¢ a mile to break even on the operation.

Southwest Feeder Files Intention

Southwest Feeder Airlines Inc., organized Nov. 9 under Delaware laws, notified CAB Nov. 13 of intention to file application for eight feeder routes in southwest and midwest. Complete story on page 10.

Braniff Asks Inclusion of Lubbock

Braniff Airways has filed application for inclusion of Lubbock, Tex., as intermediate stop on AM-15 between Wichita Falls and Amarillo.

Northwest Seeks Seattle-Vancouver

Northwest Airlines has filed application for a mail-passenger-property route between Seattle and Vancouver.

International Air Lines Withdraws

International Air Lines, of Nogales, Ariz., has been granted permission to withdraw its application for a route from San Diego, Cal., to Mazatlan, Mexico, via El Centro, Yuma, Phoenix, Tucson and Nogales.

Hearing for Southwest Routes Opens

Hearing opened before CAB Examiner Thomas L. Wrenn, Nov. 14, on following applications for convenience and necessity certificates: Continental Air Lines between Hobbs, N. M., and San Antonio, Tex., via Midland, Big Spring and San Angelo, and between Pueblo, Colo., and Amarillo, Tex.; Braniff Airways between Denver, Colo., and Laredo, Tex., via Pueblo, Amarillo, Lubbock, Big Spring and San Antonio; between Lubbock and Houston, via Abilene and Austin, and between San Antonio and El Paso, via Uvalde, Del Rio and Marfa; Essair, Inc. between Garden City, Kan., and Houston, Tex., via Amarillo, Lubbock, Abilene, Big Spring, San Angelo and Austin, or in alternative, same route with Albuquerque as terminal point instead of Garden City; Trancontinental & Western Air between Amarillo and Houston, via Lubbock, Abilene and Austin, and between Abilene and Dallas via Ft. Worth. American Airlines appears as intervenor. Testimony for the first week was given mostly by interested city witnesses.

TWA Files New Marquette Purchasing Agreement

If granted CAB permission, TWA will purchase Marquette Airlines for \$225,000 instead of for \$350,000, according to terms of a new agreement recently filed. CAB has ordered the proceeding involving TWA's purchase application reopened to receive further evidence. Complete story on page 10.

Du Pont Directorates Approved

Interlocking directorates involving Richard C. du Pont as director and president of All American Aviation Inc. and director of Spencer-Larsen Aircraft Corp. have been approved by CAB.

American Files U. S.-Mexico City Application

American Airlines filed application Nov. 14 for a 1,711-mile passenger and property route between the respective terminal points El Paso, Tex., and Ft. Worth-Dallas, Tex., the intermediate point Monterrey, Nuevo Leon, Mexico, and the terminal point Mexico City, D. F., the certificate to include Eagle Pass, Tex., or Laredo, Tex., or San Antonio, Tex., or more than one of these cities, as additional intermediate points, if CAB determines that public convenience and necessity so require. Company states that it has received a permit issued Oct. 25, 1940, by the Secretary of Communications & Public Works of Mexico authorizing establishment of international passenger-cargo service between Mexico City and Eagle Pass or Laredo via Monterrey.

PAA Seeks Singapore Service

Pan American Airways Co. (Nev.) filed application Nov. 15 for certificate amendment authorizing extension west of Manila, P. I., to Singapore, Straits Settlements, as additional terminal of North Pacific service. Complete story on page 19.

MCA Gets Permission to Omit Aberdeen

Mid-Continent Airlines has been authorized to suspend service to Aberdeen, S. D., on AM-26, for 60 days because of airport inadequacy.

Effective Date of UAL Mail Order Changed

Effective date of CAB order of Aug. 26, 1940, regulating mail pay for United Air Lines, has been changed to Sept. 7 from Sept. 1, 1940, at request of carrier.

Examiner Approves United Airport Sale

After brief hearing on sale of United Airports Co. of California Ltd., by United Air Lines to Lockheed Aircraft Corp., CAB Examiner J. Francis Reilly announced that he would recommend approval of the transaction without issuance of an advisory report. Complete story on page 3.

UAL Announces Fresno-Sacramento Non-Stop

United Air Lines has filed notice of intention to begin non-stop Fresno to Sacramento service on AM-11, starting between Dec. 15 and Feb. 1, using Douglas DC-3 or Lockheed Lodestar equipment.

Kansas City-Memphis Route Not Required

The CAB on Nov. 18 declared that air transportation of persons, property and mail between Kansas City, Mo., and Memphis, Tenn., via Springfield, Mo., is not required by public need, and denied application of Braniff Airways, Eastern Air Lines and Chicago & Southern Air Lines for the route. Complete story on page 16.

Boston-Maine Changes Name

Boston-Maine Airways Inc. filed notice Nov. 20 changing its name to Northeast Airlines Inc.

Chicago & Southern Withdraws Application

Chicago & Southern Air Lines entered a motion Nov. 20 withdrawing its application for St. Louis-Detroit route, via Cincinnati, Dayton and Toledo.

Panagra Certificate Amended

Pan American-Grace Airways Inc. has been granted an amendment to its certificate authorizing the addition of six stops for transportation of persons, property and mail, addition of two mail services, and abandonment of operations to four points. Complete story on page 18.

Pan Am Files Non-Stop Notice

Pan American Airways Co. (Del.) notified the CAB, Nov. 20, of its intention to operate eastbound flights between U. S. and Lisbon without a scheduled stop at Horta, the Azores, starting sometime in December. Stop will be made at Horta on such flights primarily for refueling, when weather conditions at Horta

National's Record Breaker



The second of National Airlines fleet of three Lockheed Lodestars arrived in Jacksonville, Fla., in mid-November after a ferry flight which was made in only 38 minutes more elapsed time than was made by the record-breaking Lodestar flight of Nov. 2, 1940, which was timed in 9 hrs. 29 min. from Burbank, Cal., to Jacksonville. (AMERICAN AVIATION, Nov. 1). The second ship was piloted by Capt. E. J. Kershaw, National's chief pilot, and Paul Yongs, west coast representative of Wright Aeronautical Corp. Passengers aboard were Adolph Liska, crew chief

of National, and Kenneth Frank, president of Dixie Airways.

The Lodestar shown in flight has established a coast-to-coast record for transport planes when G. T. Baker, National's president, made a one-stop delivery flight with it via Dallas, shattering the transcontinental mark of 10 hrs. 34 min. made by Howard Hughes in 1938.

National's Lodestars are powered by two 1,200-hp. Wright Cyclones, most powerful single-row aircooled engine, giving the ship a top speed of 28 mph. and a cruising speed of 230 mph.

are favorable. When stop is to be made at Horta, Pan Am will accept traffic and from that point. The proposed method of operation will continue until about May 1, 1941.

TWA Seeks 3 Kansas Stops
TWA filed application, Nov. 20, for the inclusion of Topeka, Salina and Hutchinson, Kan., as intermediate points on AM-2, New York-Los Angeles.

Calendar of Hearings

Dec. 5—American Airlines, rate hearing.

Quirks of Radio Beam Related As CAB Studies Cause of UAL Crash

Functioning of the Salt Lake City radio range on the morning of Nov. 4 when an eastbound United Air Lines plane crashed 10 miles north of the city, killing seven passengers and three crew members, was the subject of close study at hearings of the Civil Aeronautics Board's safety bureau to determine the probable cause of the accident.

Testimony that the radio beam was emitting confusing signals a short time after the crash was offered by Capt. C. M. Christenson, who flew UAL's trip 11 in from Denver early that morning. Capt. Christenson declared that he received only "A" signals (dot and dash) where he should have received "N" signals (dash and dot). "The 'N' signals," he testified, "no longer existed, and the radio range was absolutely useless except for taking direction finding bearings."

Capt. Christenson's explanation of the operation of the signals indicated that Capt. Howard Fey and Thomas E. Sandgren, pilot and first officer of the crashed plane, might have believed they were in the "A" quadrant northwest of the airport when in fact the plane was approaching the eastern mountains, far over in the sector where "N" instead of "A" signals should have been received.

Capt. Henry C. Hollenbeck, who flew a Western Air Express trip northward from the Salt Lake City airport at 9:10 am., about four and a half hours after the crash, told the examining board that the range signals were completely scrambled at that time. He explained that when he took off, the weather had cleared sufficiently to permit contact flying and he could therefore observe the discrepancies between the signals he was receiving and those he should have been receiving.

Another WAE pilot, Capt. Frank E. Dace, who flew a trip in from Las Vegas the night of Nov. 3, but did not land at the Salt Lake airport because of weather conditions and other circumstances, testified that during his procedure maneuvers over the field, he

noted no erratic behavior on part of the radio range.

Weather Conditions Variable

General weather conditions on Nov. 4 were described by David J. Stevenson, forecaster at the Salt Lake office of the U. S. Weather Bureau, as extremely variable from 2 am. to 4:30 am. and still variable with a ceiling of about 1,000 feet and visibility of five miles from 4:35 to 5:35 am., the period during which the crash presumably occurred.

Testimony of United weather forecasters indicated that the actual weather conditions followed closely their forecasts, which were amended as the flight progressed; that conditions prevailing at the Salt Lake terminals were substantially as anticipated at the time the flight started from San Francisco, and that the company forecasters were at no time apprehensive that the flight would encounter difficulties because of weather conditions.

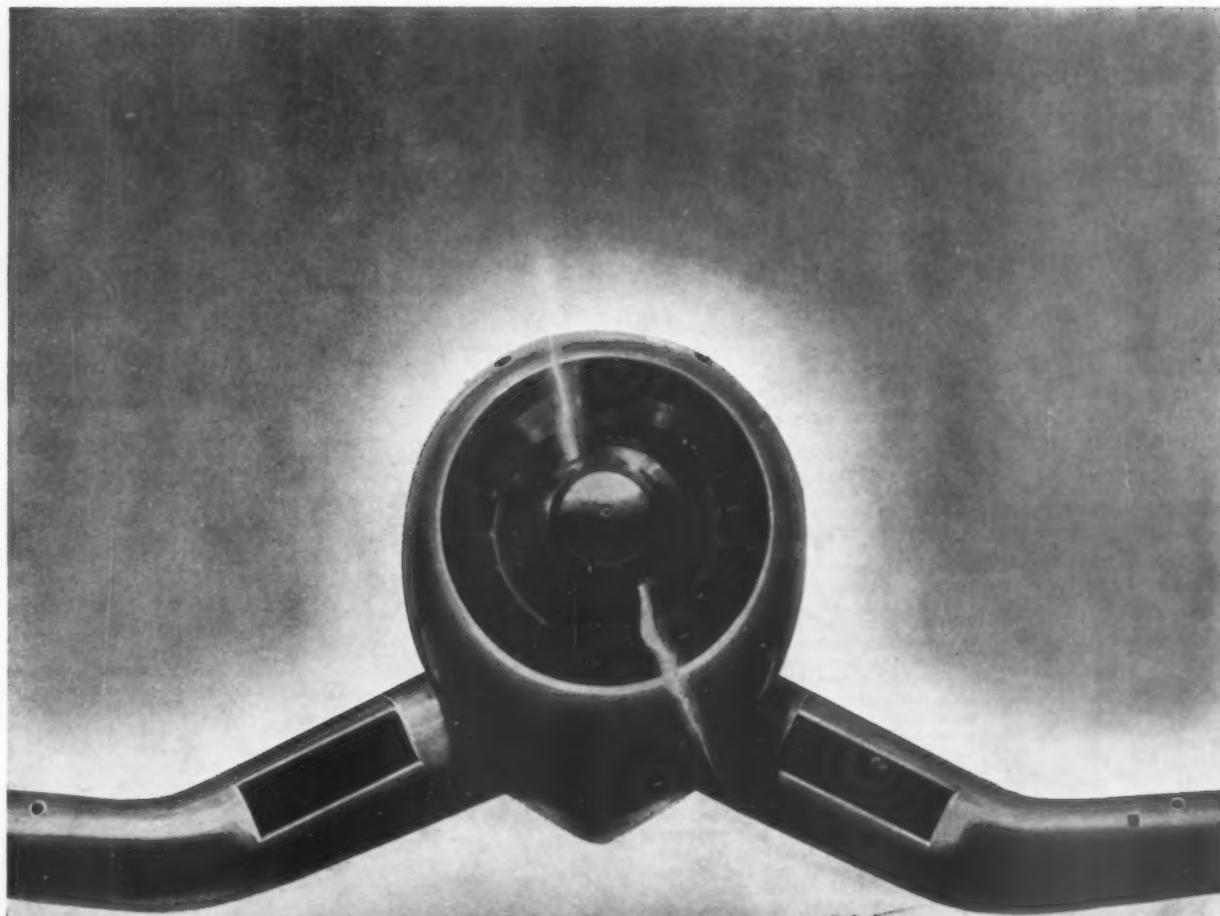
Conducting the hearings were G. Grant Mason, Jr., CAB member, and Stewart G. Tipton, safety bureau attorney, with Jerome Lederer, safety bureau director, and Frank E. Caldwell of the investigation division participating in questioning of the witnesses.

'Ask Me About Express'

Part of the plan of Railway Express Agency Inc. to develop air express business is distribution of an information folder among REA and airline employees containing the answers to most frequently asked questions concerning the service. Currently, REA and airline personnel who meet the public are wearing "Ask Me About Air Express" buttons to expedite the selling job.

Building Canada's Largest Hangar

The Trans-Canada Air Lines' hangar now being built at Montreal's new airport at Dorval will be the largest ever built in Canada as one unit, according to company announcement.



America's Fastest **POWERED BY A DOUBLE WASP**

From Vought-Sikorsky comes this new fighter, hailed as America's fastest. The airplane, like the engine, was designed and built in cooperation with the U. S. Navy. The power is provided by a Pratt & Whitney Double Wasp . . . the most powerful engine ever installed in a fighter. Again the radial air-cooled engine leads the way!

PRATT & WHITNEY AIRCRAFT

EAST HARTFORD, CONNECTICUT

ONE OF THE THREE DIVISIONS OF UNITED AIRCRAFT CORPORATION



Death Valley Scotty's Castle Now Open to Visitors

One of the world-renowned attractions of Death Valley is Scotty's Castle. The Castle is owned by Death Valley Scotty and his partner Albert Johnson and is probably the most famous constructed and furnished private dwelling in the world.



More than seven years and a reputed \$2,500,000 have gone into the building of this dream castle in the desert. The thick walls of massive concrete effectively ward off the fierce heat of the sun. It was built on the strength of underground passages which many people believe lead to Scotty's mysterious gold mine.



Nowhere in the world is there a finer display of hand-wrought iron work. Practically all of it was forged on the spot by craftsmen imported from the Old World. The dominating feature of the Castle is the graceful clock tower whose mellow chimes can be heard for miles in the clear desert air.



Inside all is peace and quiet, broken only by the tinkling fountain, the hand-tooled leather, antique furniture and rugs, handmade Spanish tiles, carved beams and wood-work.



Because of the tremendous interest in the castle by the outside world, the owners have graciously opened it to visitors for a small admission fee. Guests may remain as long as they desire in the premises and, by making advance reservations, may arrange to stay for lunch or overnight.

This year, for the first time, Western Air Express has arranged a number of attractive side trips to the Death Valley region from its airport at Los Angeles. Novelties of two days three days all-expense tours are provided, starting low as \$20.00. These private limousine tours offer the best and most comfortable way to see some of the world's most colorful and historic desert scenes. Detailed tour literature is available at airline ticket offices, travel agents and hotels.

Transport in Central America

(Continued from page 1)

five times weekly. On Jan. 1 a daily service is to be instituted.

Some months ago American Airlines announced its intention of filing for a route to Mexico City from two of its present stops, El Paso and Ft. Worth, Tex., with a stop at Monterrey, Mexico. The government has granted a permit to American and only the approval of the Civil Aeronautics Board remains to permit American to operate directly to Mexico City with its Douglas DC-3 equipment.

AAA Setting Up Company

O. M. Mosier, vice-president of American, and Fred Glass, attorney, were in Mexico City the week of Nov. 11 completing details toward the setting up of a Mexican company, American Airlines de Mexico, S. A., capitalized at 1,000,000 Pesos, (\$200,000). Erby Swift of Mexico City is the local attorney.

American formally filed with the CAB on Nov. 14 its application for the 1,711-mile passenger-property route between the respective terminal points of El Paso and Ft. Worth, Tex., and Mexico City with intermediate points.

American proposes to build landing fields and radio stations along its route and the Mexican subsidiary will have charge of all ground facilities. American's permit was granted by the Department of Communications and Public Works and extends until 1950. On the Mexican company board are five American residents of Mexico and one citizen of Mexico. Control is vested in American Airlines Inc., and the Mexican subsidiary will not own airplanes or engage in flying. American's proposed service is purely international and will not engage in passenger-carrying within Mexico. A passenger tariff of about 5c a mile, considerably under PAA's tariff, is to be filed.

American Export's application for two routes to Central America out of New Orleans to connect with its newly-acquired TACA lines, already has been announced. The company is now negotiating for a permit into the Republic of Panama and is expected to extend operations there shortly. Approval of the U. S. War and Navy Departments is necessary but it is understood no objection will be raised by these departments. TACA could never obtain permission to fly to Panama because it was owned by a British subject, Lowell Yerex. Now that TACA is owned by an American corporation the former objections have been eliminated.

A surprise slant on the Central American transport situation appeared when Yerex, who maintains his status as general manager of TACA, announced that he has obtained a franchise from the British Government for an airline between Port of Spain, Trinidad, and the Barbadoes, British owned islands to the north of Trinidad. Yerex purchased a Lockheed Lodestar which has been flown to Honduras and will be flown from there across the West Indies to Trinidad.

The new Yerex company is known as British West Indies Airways, and will replace the former line operated by KLM, Royal Dutch Air Lines, which was forced to suspend service to Trinidad following British charges that anti-British documents were carried. Yerex said the British

desired a British subject to operate the line.

There were indications that this new line in the eastern Caribbean might be the nucleus of a West Indies route eventually to feed into or become part of American Export. It is considered possible that Yerex will endeavor to serve other British possessions in the Indies.

TACA and PAA Fight

By far the most turbulent situation is in Guatemala and Costa Rica where TACA and PAA are engaged in a bitter fight. Nothing has yet developed into tangible action in Costa Rica but a Pan American line to serve Costa Rica with freight-mail-passenger service is in the making, providing direct competition to TACA which pioneered local service.

In Guatemala, TACA's franchise expires next Feb. 25 but the Guatemalan government may cancel the contract prior to that date. Even today TACA is not permitted by Guatemala to conduct international business, hence the Lockheed 14 passenger service operates only between Costa Rica and El Salvador, and within Guatemala itself.

On Nov. 8 a new company known as Aerovias de Guatemala, S. A., began operating within Guatemala and invading the TACA territory, even to the extent of using landing fields in the jungle which TACA built and which it owns under five-year lease. PAA owns a minimum of 40% and maximum of 50% interest in the new company, and PAA ships and pilots have been transferred.

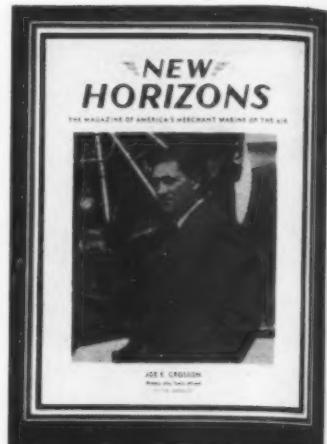
President of the company is A. E. Denby, an American, one-time chauffeur and bodyguard of the former president of Guatemala and now a retail meat store owner. Vice-president is E. R. Silliman, special representative for Pan American on the western division and for 11 years with the company. Secretary-treasurer is Willis D. Howe, Guatemalan banker. Denby subscribed to 300 shares valued at \$30,000, and Pan Am owns a like amount. Both represent 75% of the stock, the remaining 150 shares being sold, or having been sold, to the public.

E. W. Melville, former TACA manager for Guatemala, is assistant manager, and Harry Goakes, formerly with Western Air Express at Burbank, Cal., is operations manager. Pan American pilots headed by Senior Pilot Ray Young, are doing the flying. One DC-2 went into service Nov. 8 and a second DC-2 has been stripped for freighter service at Brownsville and will go into service shortly. PAA sold both ships to the new company for \$35,000 each. At least one twin-engine Cessna T-50 has been sold to the line, and three Boeing 247 transports were sold recently to PAA's western division and may go into freighter service in Central America shortly.

Charges Made

TACA officials charge Pan Am with inspiring government opposition to its line in Guatemala. PAA maintains it does not know why the government has turned against TACA but makes no secret of its desire to replace TACA at the invitation of the government. Denby maintains that Guatemala offered the concession to him with the pro-

House Organ



Pan American Airways' new house organ, "New Horizons," on the cover of its November issue featured Joe Crosson, general manager of Pacific Alaska Airways, Pan Am subsidiary. Subtitle of the publication is "The Magazine of America's Merchant Marine of the Air." It succeeds "Pan American Air Ways" and sells for 10 cents.

vision that Pan Am be a financial participant.

Pan Am has never engaged in internal services in Central America except for one year-long venture with a Ford which lost money. E. R. Silliman asserted that Pan American is not interested in internal services except when local governments make the request. Aerovias de Guatemala is engaging in the type of service for which TACA was famous: carrying tons of chicle from the jungle to a Gulf port, all varieties of cargo from passengers to chickens, machinery and flowers. Passengers often sit on top of cargo. Expected load allowance for a DC-2 will be about 5,000 pounds.

In Mexico Pan Am was denied on Nov. 7 an application from its Compania Mexicana de Aviacion for a franchise to operate a local service between Mexico City and Nuevo Laredo, opposite Laredo, Tex., with stops at Monterrey and other points. The Department of Communications and Public Works, having denied the franchise to the PAA subsidiary, granted it instead to Compania Aeronautica Francisco Sarabia, the airline started by the late well known Mexican flyer who was killed last year in Washington, D. C., and now operated by his widow.

This franchise calls for mail between Mexico City and Nuevo Laredo, and passengers between Mexico City and Monterrey. The government at the same time granted a passenger franchise from Torreon to Nuevo Laredo via Monterrey to Lineas Aereas Mineras, S. A., linking up with this line's existing route between Mexico City and Ciudad Juarez, opposite El Paso. American Airlines' proposed route will duplicate to some extent the new route of the Sarabia line, but American will carry international passengers and the Sarabia line local traffic.

Sioux City Dedicates

A crowd estimated at 15,000 persons witnessed the dedication of Sioux City, Ia., Municipal Airport recently. Main speeches were given by Smith Purdon, Second Assistant Postmaster General, and Eddie Rickenbacker, president of Eastern Air Lines. Mid-Continent Airlines had one of its new Lodestars present during the ceremonies and Northwest had a DC-3.



Aircraft Accessory Equipment

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National Defense

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U. S. COAST GUARD



U. S. ARMY



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Whether the need has been for equipment applications on the ground, at sea or in the air, Eclipse products have consistently proven their ability to fulfill the requirements of military service.

We are justifiably proud of this record of dependability, service and progress—and honored too at the part Eclipse Accessory Equipment is playing in the establishment of National Defense Security.

**AIRCRAFT ACCESSORY
EQUIPMENT UTILIZED BY
U. S. MILITARY SERVICES**



ENGINE STARTERS: Inertia, Direct Cranking Electric, Combustion, Hand Turning Gears, Combination Direct Cranking Electric and Inertia.

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VACUUM PUMP AND ICE-ELIMINATION EQUIPMENT: Air Valves, De-Icer Control Valves, De-Icer Distributing Valves, Suction Regulating Valves, Suction Relief Valves, Check Valves, Pressure Relief Valves, Oil Separators, Engine Driven Air Pumps, Propeller Anti-Icer Pumps.

HYDRAULIC EQUIPMENT: Engine Driven Hydraulic Pumps, Motor Driven Hydraulic Pumps, Hand Hydraulic Pumps, Hydraulic Remote Control Units.

MISCELLANEOUS ACCESSORY EQUIPMENT: Direct Reading Fuel Flowmeters, Retracting Motors, Supercharger Regulators, Automatic Mixture Controls, Propeller Governor Controls, Engine Synchroscope, Ammunition Rounds Counters and Contactors, Mechanical Engaging Solenoids, Auxiliary Engines, Auxiliary Power Supply Systems, Accessory Gear Boxes.

ECLIPSE AVIATION

DIVISION OF BENDIX AVIATION CORPORATION

BENDIX, NEW JERSEY, U. S. A.

Domestic Airlines Earn \$4,266,992 Net Profit For First Nine Months

Aggregate Earnings and Traffic Are Better, Jan.-Sept. 1940, Than for Any Previous Full Year; 15 Companies in Black

Earnings for the domestic air transport industry during the first nine months of 1940 far in excess of the total reported for any full year of airline history are revealed in a compilation by AMERICAN AVIATION of the monthly statements filed with the Civil Aeronautics Board.

Aggregate net income transferred to surplus, after allowance for federal and state income taxes, from Jan.-Sept. 1940, amounted to \$4,266,992, some 78% better than earnings for the similar 1939 period, and 35% greater than total profits of \$3,138,000 for the entire calendar 1939.

Shattering their record traffic marks of last year, the domestic carriers in nine months of 1940 have served 2,065,400 revenue passengers, compared with 1,220,000 for Jan.-Sept. 1939, and 1,703,300 during all of 1939. Revenue passengers for entire 1940 should exceed 2,750,000. Passenger load factor for this year's nine months was 59.7% compared with 55.5% a year ago.

Million Dollar Earners

Leading in profits for 1940 are American Airlines with \$1,556,849, and United Air Lines with \$1,133,384. These companies, whose combined earnings represented some 63% of the industry profits, carried over 47% of the total revenue passengers.

Transcontinental & Western Air reported earnings of \$237,187 for 1940, against a \$5,489 loss a year ago, after giving effect to the CAB rate decision Sept. 19 providing retroactive mail pay from Jan. 1-Aug. 31, 1940, of \$484,399. Since Marquette Airlines, which lost \$71,204 during the period, is no longer operative, it is likely that all of the carriers will finish the year in the black.

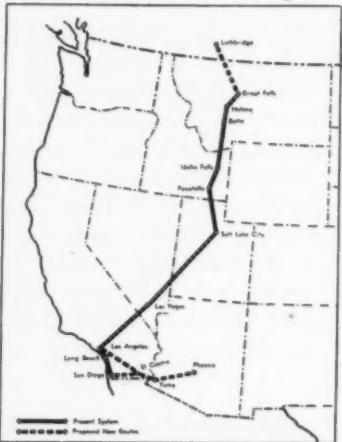
The industry will not be affected by the excess profits tax this year, since in addition to the exemption allowed all corporations—either average earnings for the base period 1936-1939 or 8% on invested capital—the airlines are permitted an exemption equivalent to their mail revenues.

So long as net income after normal taxes does not exceed mail revenue, plus

the excess profits tax credit, an air carrier is not subject to the excess profits levy, and the sharp improvement in earnings notwithstanding, none of the airlines is expected to show a profit greater than its mail income.

Increased economical use of the larger equipment flown by the transport companies is indicated by the fact that revenue passenger miles flown were up 60% over the total for the first nine months of 1939, while passenger seat miles were rising only 49%. Express pound-miles increased 26%, from 3,089,891,800 for the 1939 period to 4,806,700,000 this year.

VII. Western Air Express —Present and Proposed



This is the seventh of a series of maps showing new routes sought by the major airlines in applications to the Civil Aeronautics Board. Western Air Express' proposed operations, in addition to the present system, are shown.

SUMMARY OF AIR TRANSPORT OPERATIONS, JAN.-SEPT., 1940

(Compiled from Monthly Reports to the CAB a)

	Rev. Pass.	Rev. Pass. Miles	Avail. Seat Miles	Pass. Load Factor	Operating Revenue	Operating Expense	Net Income Before Inc.	Net Income Transf. to Surplus	Transf. to Surplus Jan.-Sept. 1939
American	\$31,700	225,299,841	331,488,681	64.4%	\$11,152,188	\$13,038,124	\$2,884,932	\$1,556,849	\$ 964,383
Boston-Maine	26,977	2,138,636	6,680,890	47.7%	278,701	360,800	15,001	1,212,211	2,792 (red)
Braniff	\$3,225	26,445,675	55,438,032	47.7%	1,869,900	1,227,291	56,680	43,960	26,205
Chicago & Southern	29,630	11,422,385	32,154,541	53.5%	866,161	21,913	24,238	45,345	
Continental	11,000	9,426,185	14,220,565	47.7%	1,021,401	1,401,401	37,900	37,900	
Delta	38,685	9,426,185	18,028,479	52.2%	801,072	798,479	6,906	5,059 (red)	35,048
Eastern	572,428	115,262,696	203,007,874	88.7%	7,795,743	6,891,700	3,011,074	801,689	801,689
Inter-Island	1,100	1,000,000	1,000,000	50.0%	28,200	28,200	0	0	
Marquette c	22,175	2,321,043	4,687,961	52.2%	286,793	382,433	28,442	32,063	11,088 (red)
Transcontinental	798	185,521	636,342	29.2%	10,094	81,307	71,204 (red)	71,204 (red)	21,111 b
National	10,000	4,413,211	11,623,540	44.7%	372,183	322,071	45,318	31,100	10,621
Northwest	107,642	39,742,000	85,716,830	46.3%	3,094,303	2,801,580	388,000	241,011	274,094
Penn-Central	157,375	26,143,973	49,978,585	56.3%	1,462,600	1,416,602	247,927	176,929	66,469
TWA	229,000	229,000	1,000,000	50.0%	1,000,000	1,000,000	0	0	200,000 (red)
United	339,849	170,493,828	265,971,492	64.1%	12,157,054	10,697,432	1,436,685	1,123,384	352,820
Western Air	35,612	12,167,384	32,021,128	82.8%	1,250,106	1,050,387	194,128	149,306	\$2,012
Catalina	27,300	2,700,000	1,266,398	64.8%	139,617	106,738	30,921	30,921	
Totals	2,055,475	777,716,304	1,301,073,777	59.7%	\$86,589,581	\$90,343,334	\$5,887,282	\$4,266,992	\$2,384,345

a All monthly reports to the CAB are subject to revision and year-end adjustment.

b Marquette reports to the CAB did not start until Aug. 1939.

c Trans-Continental Air Lines ceased operations Aug. 14 when service was taken over by TWA.

d TWA revenue includes retroactive mail compensation due under CAB order of Sept. 19, 1940.

e Catalina Airline did not file reports with the CAB during 1939.

CAB Denies Three Applications for Kansas City-Memphis Route

A new route between Kansas City, Mo., and Memphis, Tenn., with an intermediate stop at Springfield, Mo., would not afford a material saving of time for either passengers or mail, nor develop sufficient business to justify the cost to the government, the Civil Aeronautics Board ruled, Nov. 18, denying applications of Braniff Airways, Eastern Air Lines, and Chicago & Southern Air Lines for the proposed operation. The CAB decision confirmed the findings of an advisory report issued Aug. 1, 1940, by Examiner Francis W. Brown and John W. Bell who recommended denial of the applications.

Since service is at present available from Kansas City to St. Louis via TWA, and between St. Louis and Memphis via Chicago & Southern, the applicants had stressed importance of the proposed route in bringing improved service for local traffic between the cities involved.

In its decision the Board stated: "Whether the improved local service thus provided will have a value commensurate to its prospective cost to the government must be determined by weighing that cost against the aggregate probable contribution to the public convenience . . . A small saving in transit time for even a considerable number of travelers and a considerable amount of mail would not justify a large outlay of government funds, nor would such an outlay be justified if the number of prospective travelers and the amount of mail were to be extremely small, even though the saving of time were large."

"In our opinion the number of persons who would benefit by the establishment of a direct route between Kansas City and Memphis, involving a saving of only 100 flight miles, representing approximately 40 minutes flight time and a maximum of \$7 in fare, are not sufficient to warrant the substantial government expenditures which would be involved."

Government Expenses

The Board indicated that based on the applicants' estimates annual mail pay for two round trips daily would approximate \$100,000, while in addition government outlays of \$55,800 for radio facilities between Springfield and Mem-

phis, with \$16,000 annual maintenance cost, and \$148,400 for lighting equipment along the route, with \$18,100 annual maintenance expense, would be required.

After suggesting "considerable stress was placed upon the fact that the proposed route would provide air transportation service to Springfield," the report noted that although Springfield is an authorized intermediate point on American Airlines' AM-30 from Chicago to Dallas, no service has been rendered there since 1934 because of airport limitations.

"Although it has not been our practice to make the granting of a certificate conditional on the availability of adequate airport facilities for the immediate inauguration of operations," the Board declared, "the case in which the argument for a new route is based in part upon the service to be rendered to an intermediate point, and the connection to be made there, requires that the status of that point be taken into consideration."

"When it appears that service to the proposed intermediate point is currently impossible because of airport conditions and when there is absence of any showing that the defects will be remedied in the reasonably near future, arguments which assume the availability of the point for service can be given but little weight."

Springfield as an intermediate stop was included only in applications of Eastern and Chicago & Southern, but during the hearing Braniff expressed willingness to serve that city if it was found that public convenience and necessity required such service.

Dr. Brannan Joins EAL's Aero-Medical Department

Dr. Max Brannan, formerly medical examiner with the CAA, has been appointed assistant to Dr. Ralph Greene, founder and director of Eastern Air Lines' aero-medical department. A pilot since 1936, Dr. Brannan received rating as

a flight surgeon while on active duty at Hamilton Field, Cal., and has owned and operated aircraft in connection with private practice of medicine.

He received his doctor of medicine degree at Tulane University in 1932 and is trained in surgery, urology, tuberculosis, and ailments of eye, ear, nose and throat.

Headquarters of Eastern's aero-medical department are in the LeBlond Bldg., Coral Gables, Fla.

\$7,000 Fire Loss at Framingham

Fire started by an overheated stove recently swept the office and shop of the Framingham, Mass., Airport causing an estimated \$7,000 damage. An airplane owned by the airport, equipment and office records were destroyed.

SUMMARY OF U. S. AIR TRANSPORT OPERATIONS FOR SEPTEMBER

(Compiled and Mileage Costs Computed from CAB Reports a)

	Rev. Pass. Pass. Miles	Avail. Seat Miles	Pass. Load Factor	Planes Operated	Exp. & Frt. Lb.-Miles	Mile Revenue	Pass. Revenue	Mail Revenue	Operating Revenue	Operating Expense	Cost per b Mile Fd. \$	Net Income Before Inc. Taxes	Total Revenue
All American c	50	50	50	8	53,825	\$1,161,000	5,000	3,200,386	2,040,601	3,20,260	.848	\$ 20,251 (red) 5	15,776,798
American	93,370	31,981,927	45,542,855	62.13%	176,186,000	348,177,176	1,598,600	32,381,800	2,040,601	1,64,221	.65	\$ 4,000 (red) 5	330,621
Boston-Maine	3,208	473,123	907,644	52.13%	47,409,079	1,305,651	25,423	21,498	47,781	27,113	.48	\$ 38 (red)	490,317
Braniff	11,000	3,398,272	7,810,946	45.20%	18,365,520	48,578,042	152,374	69,322	320,687	224,272	.83	\$ 903	1,832,307
Chicago & Southern	1,070	1,070,000	1,070,000	50.0%	1,070,000	254,125	24,238	11,000	1,070,000	113,024	.47	\$ 4,000 (red)	2,021,116
Continental	1,639	501,287	1,099,463	45.59%	6,600,447	6,600,447	20,807	20,807	40,382	61,753	.73	\$ 74,061	2,021,116
Delta	8,038	1,292,453	2,437,460	52.02%	1,859,414	14,376,386	56,938	36,765	16,763	106,018	.48	\$ 844	920,121
Eastern	1,437	377,629	936,440	40.53%	74,000	19,120,000	64,000	142,000	88,454	720,511	.54	\$ 6,111	100,000
Inter-Island	3,064	287,479	508,035	56.59%	503,706	1,414,424	18,246	31,108	46,823	46,823	.47	\$ 2,000 (red)	382,607
Marquette	2,604	224,088	1,740,161	41,60%	7,100	1,504,000	31,152	30,383	32,885	2,507	.99	\$ 311,121	311,121
National	2,604	1,24,088	1,24,088	50.0%	7,100	1,504,000	31,152	30,383	32,885	2,507	.99	\$ 311,121	311,121
Northwest	14,428	5,845,186	10,477,845	55.79%	24,820,690	116,011,178	247,263	147,330	440,436	348,358	.54	\$ 8,249	3,067,878
Penn-Central	21,573	18,764,006	6,786,246	55.47%	15,080,027	22,893,930	210,056	51,384	274,823	239,100	.57	\$ 14,117	3,122,621
Trans-Continental	1,682	414,482	909,488	45.57%	969,524	0	20,988	0	21,384	1,028,50	.60	\$ 78,299	16,849,156
United	49,895	28,013,976	37,273,645	67.11%	209,013,320	502,821,831	1,242,328	317,783	1,654,548	1,450,406	.63	\$ 180,202	17,320,228
Western Air	1,682	1,167,384	1,167,384	50.0%	10,200	10,200	67,000	67,000	150,605	125,800	.57	\$ 25,032	17,320,228
Catalina	3,620	108,870	182,500	56.59%	2	20,988	0	20,988	20,988	20,988	.77	\$ 5,936	10,666,000
Totals	290,919	108,088,317	174,238,687	62.03%	330	647,046,578	1,890,677,395	55,385,903	\$2,134,873	57,854,067	\$6,416,614	\$1,386,228	\$69,333,700

a All monthly reports to the CAB are subject to revision and year-end adjustment.

b Total operating expense divided by total plane miles; computed to nearest half-cent.

c All American Aviation Inc. began its pick-up and delivery service under CAB authorization Aug. 13.

d Mail rate to be determined by hearings before CAB.

NOTE: The following reports to June operating results (AMERICAN AVIATION, Sept. 1, p. 22) have been submitted to CAB.

\$326,087 instead of \$338,437, and \$1,081,603 instead of \$1,086,730. Eastern Air Lines: Net income before income taxes \$326,087 instead of \$338,437; Net income before income taxes \$1,081,603 instead of \$1,086,730.

\$326,087 instead of \$338,437, and \$1,081,603 instead of \$1,086,730. Eastern Air Lines: Net income before income taxes \$326,087 instead of \$338,437; Net income before income taxes \$1,081,603 instead of \$1,086,730.

e Marquette Airlines ceased operations Aug. 14 when service was taken over by TWA. Figure reported by TWA for operation of Marquette route are included in TWA totals.

f Includes mail revenue Sept. 282,803. Adjustment for Aug. 1940, \$4 (red); retroactive to Aug. 1, 1940, to Aug. 31, 1940, granted by CAB, \$484,399.

g Includes mail revenue Sept. 1, 1940, to Aug. 31, 1940, granted by CAB, \$484,399.

h Includes mail revenue Sept. 1, 1940, to Aug. 31, 1940, granted by CAB, \$484,399.

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q Includes mail revenue Sept. 1, 1940, to Aug. 31, 1940, granted by CAB, \$484,399.

r Includes mail revenue Sept. 1, 1940, to Aug. 31, 1940, granted by CAB, \$484,399.

s Includes mail revenue Sept. 1, 1940, to Aug. 31, 1940, granted by CAB, \$484,3

6 Round Trips To the Moon!

MARTIN CLIPPERS ROUND OUT
FIVE YEARS TRANS-PACIFIC



Record..

NUMBER OF TRIPS	361
ROUTE MILES FLOWN	2,994,717
PASSENGER MILES	12,718,213
PASSENGERS CARRIED	3,973
MAIL TON MILES	568,720
EXPRESS TON MILES	274,735

FIVE YEARS SHUTTLING back and forth across the biggest ocean of them all—the 8,500-mile Pacific! That is today's record of Martin's famed "China" and "Philippine" Clippers. Few, if any, airplanes ever built have equalled the gruelling service of these Pan-American Airways ocean airliners—10,000 hours flight time between California and the Orient for each of them. Or, more strikingly expressed, each of these airplanes has spent nearly one quarter of the past five years in the air—actually 23.9% of the actual hours since November 22, 1935.

AND TODAY these airplanes are as sturdy as ever, still first ships of the line, taking their regular scheduled turns over the Pacific route! They have traveled almost 3,000,000 route miles, carried nearly 4,000 passengers with heavy loads of mail and express, and every week the amazing record increases—with no end in sight.

THESE "SHIPS that couldn't be built," piloted by the late famed Captain Edwin Musick, soared westward from San Francisco on the first scheduled trans-oceanic air service on November 22, 1935. Today, men and women and children casually step aboard these first air leviathans and are whisked across the vast ocean

in luxurious comfort and in a fraction of the time of surface vessels.

THE GLENN L. MARTIN COMPANY pays tribute to Pan-American Airways and its skilled personnel for the magnificent record of operation. And MARTIN takes justifiable pride in having conceived, engineered and constructed these modern ocean airliners—worthy contributors to the advancement of peaceful air commerce.

TODAY MARTIN PRODUCTION is devoted to defense. But when peace again rules this world, MARTIN will send forth greater and faster airliners to increase world commerce under the Stars and Stripes.

THE GLENN L. MARTIN COMPANY, BALTIMORE, MARYLAND, U. S. A.



MARTIN

BUILDERS OF DEPENDABLE AIRCRAFT SINCE 1909

Skillin Leaves TWA for All American Post; Succeeded by French



French

vice-president in charge of traffic and sales.

French, associated with Pan American Airways for the last 12 years, began his new duties in Boston immediately.

Skillin had been with TWA since 1935.

The new TWA district manager was airline sales representative in Boston for five years before joining TWA.

A native of Newton, Mass., French in 1928 became assistant to the general traffic manager of Pan Am.

He was stationed in New York and in Buenos Aires in traffic and mail work until 1935 when he returned to Boston as a sales representative for the airline.

In his work with TWA, French will be located in the company's offices in Boston's Parker House.

Riegner Is TWA's New Advertising Assistant



Riegner

Selection of Henry G. Riegner to serve as advertising assistant for TWA in the airline's advertising association with the agency of Beaumont & Hohman, was announced on Nov. 18 by V. P. Conroy, vice president—traffic & sales.

Riegner, who has been active in transportation sales promotion and advertising for the last 9 years, will be located at the company's Kansas City headquarters and will coordinate TWA's advertising program with the agency.

Brilliance



Capt. Ray Andrews, United Air Lines pilot, shows stewardess Willfred Jennings the first portable electric light ever to have been seen from a distance of 55 miles. When Capt. Andrews tested the Burgess Battery Co.'s lamp on his Chicago to New York flight, pilot in an approaching plane radioed he could see the light from a distance of 55 miles and could read the writing on a package of cigarettes by its light from a distance of two miles.

Panagra Certificate Amended to Add Six Stops and Abandon Four Others

Pan American-Grace Airways Inc. has been granted an amendment to its certificate authorizing the addition of six stops for transportation of persons, property and mail, the addition of two mail services, and abandonment of operations to four points.

The amendment, approved by the Civil Aeronautics Board Nov. 2 and signed by the President Nov. 18, permits (a) persons, property and mail service to Quito, Esmeraldas, Manta and Salinas, Ecuador, and from Guayaquil to Cuenca and Loja, Ecuador; (b) transportation of mail to and from Chiclayo, Peru, and to and from Arica, Chile, and (c) abandonment of stops at Tumaco, Colombia; Trujillo, Peru; Villazon, Bolivia, and Jujuy, Argentina.

The CAB states in its decision that "The proposed service would enable the petitioner to provide air transportation facilities to the cities of Ecuador which are of the greatest commercial importance, where existing modes of transportation are slow and inconvenient. We find that the proposed service is of great importance to the national defense of this country. Therefore, despite the cost which will be incurred we find that the public conven-

ience and necessity require the amendment."

Estimate is made that Panagra will incur loss before mail pay of \$123,382 a year for added service to Esmeraldas, Manta and Salinas, and loss of \$20,753 a year on the shuttle from Guayaquil to Cuenca and Loja. The company has been serving Quito under authorization of the Postmaster General dated Nov. 10, 1938, and under permit of the Republic of Ecuador.

As amended, Panagra's route certificate carries authorization to engage in air transportation of persons, property and mail between the terminal point Cristobal, C. Z., the intermediate points Cali, Colombia; Quito, Esmeraldas, Manta, Salinas and Guayaquil, Ecuador; Talar, Chiclayo, Lima and Arequipa, Peru; Arica, Antofagasta and Santiago, Chile; Mendoza and Cordoba, Argentina; and also between the intermediate point Arequipa, Peru, and the terminal Buenos Aires, Argentina, via intermediate points Arica, Chile; LaPaz, Oruro and Uyuni, Bolivia; Salta, Tucuman and Cordoba, Argentina; and between intermediate point Guayaquil and terminal Loja via Cuenca, Ecuador.

Record Airyx Shipment Carried by 17 Lines



All records for tonnage for a single air express shipment were shattered on Nov. 6, when the entire Nov. 11 election issue of *Newsweek* weighing 35,000 lbs. was distributed through the air service of Railway Express Agency. This was larger by 26,000 lbs. than any other one shipment in the history of air transportation in the U. S.

Sixteen transport planes of TWA and American Airlines, the two lines serving Dayton, O., where the magazine is printed, were utilized on the first leg of the big distribution job. Fifteen other connecting airlines participated in the movement of the shipment to every state in the Union and every province in Canada. Shipment consisted of 126 separate packages to 245 destination points.

Lee Wilson of New York, production manager of *Newsweek*; W. S. Robinson of Dayton, general manager of McCall Corporation printing plant; M. T. Stalter, New York, manager of mail and express, American; E. A. Hecker, Kansas City, mail and express manager, TWA; J. H. Shick, Dayton, general agent, REA; P. H. Cummings, Chicago, superintendent of organization, REA, and other airline and express officials saw the record shipment off.

The last packages of this shipment left Dayton on the 30th anniversary of the first air express shipment ever made Nov. 7, 1910—and that, too, was made from Dayton.

Airline Personnel

SO THAT THEY may become better acquainted with vacation advantages of the "Sun Country," American has sent a group of its salesmen to Arizona and southern California. Included in the group were Joe Terry and Otto Beuttenmueller of New York; Harry Wiseman and Jimmy de Rosa of Chicago, and T. P. Gould, sales manager in Syracuse.

The following United employees attained 10 years' service in September and received diamond service pins: Austin F. Trumbull, John A. Sergeant and John H. Longnecker, Cheyenne, Wyo.; W. Norman Parrish, Burbank, Calif.; C. O. Shafer and Howard B. Kastner, Oakland, Calif.; Capt. E. B. Gray and Reserve Capt. Ray B. Andrews, Chicago; Keith L. Beckett, Denver, Colo., and W. N. Edson, Salt Lake City.

States Mead, airport manager for Pan Am at LaGuardia Field, has been temporarily transferred to the same post at Lisbon, his position being filled by Edward Houriet, former assistant airport manager.

Arthur Bussey of Little Neck, N. Y., has been busied by TWA as a copilot.

R. "Dick" Leferink, president of Inland, recently announced the employment of two new first officers, Clinton E. Larson and Fred Tunnell. Larson formerly was an instructor with Elmer Hincks' Flying School in Minneapolis. For the past two years Tunnell has flown for the forest service of the Wyoming Fish and Game Commission.

Canadian Colonial has employed B. S. Macklin as first officer. He formerly served Trans-Canada as pilot.

New pilots for Eastern are R. C. Randolph Jr. and Curtis Purvey. Herbert C. Probst is now assistant maintenance inspector for Braniff at Chicago.

"Chick" Evans, who has been co-pilot for Lew Gower on C. V. Whitney's Grumman G21 for the last few years, has resigned to go with American as first officer.

Recently announced transfers and promotions by TWA follow: Dwight H. Eddy, chief ticket sales representative, Columbus; F. F. Formby, assistant engine overhaul foreman, Kansas City, Mo.; V. C. Ackley, inspector, Chicago; Max Englehardt, "A" mechanic, KC; A. S. Headline, "A" mechanic, Pittsburgh; G. E. Newman, flight engineer, New York; J. W. Morris, assistant manager of the foreign and agency department, KC; C. W. Miller, inspector, KC; Robert J. Jaxox, passenger relations manager (operations), PT; Paul J. Sheeskey, passenger relations manager, CG.

Kenneth J. Breitschopf, St. Paul, Minn., has joined United to undergo training as a pilot.

New EAL pilots are C. F. Waldner, a native of New Lebanon, Ind., who is stationed at Atlanta; Robert A. Loft, a native of Newaygo County, Mich., stationed at Miami; M. J. Chumbley, a native of Draper, Va., stationed at New York.

Charlie N. James, vice president of operations for Western Air, has announced the following changes in

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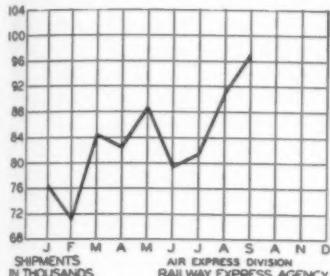
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Timely Lesson

An eight-page, illustrated pamphlet explaining "How American conducts the routine of Airways Traffic Control and Instrument Approaches to airports during overcast conditions," is distributed by the stewardess to each passenger aboard an American Airlines' Flagship whenever landing is to be made by instrument approach or when the craft is "marking time" awaiting its landing turn.

Static-Free Rubber Developed

A new rubber compound that conducts electricity has been developed by Firestone Tire & Rubber Co., Akron, O., for use in passenger car, truck, bus and airplane tires. Employed in the sidewall or tread, the new type rubber prevents the generation of static charges by grounding them through the rolling tire.

ALL-TIME HIGH

September air express shipments totaled 97,190, an increase of 24½% over Sept. 1939. Gross revenue for the month was up 21½% to an all-time high for any one month in the 13-year history of air express.

Shipments for the first nine months of 1940 totaled 751,747, an increase of 23½% over the corresponding period of 1939. Gross revenue for the nine-month span was up 26%, and the net revenue to the 17 airlines over which Railway Express Agency operates increased 26½%.

PAA Files for Singapore

Route extension southwest of Manila, P. I., to Singapore, Straits Settlements, 1,289 miles, is sought by Pan American Airways Co. (Nev.) in application filed with Civil Aeronautics Board, Nov. 15. Pan Am asks that its certificate be amended to permit transportation of persons, property and mail between the U. S. and both Singapore and Hong Kong for a period of five years from date of application. Although authority for only five years is sought, extended permission may be requested before that period is over, the application indicates.

Present intention of Pan Am is to dispatch flights on alternate weeks to Singapore and Hong Kong, now served weekly, using Boeing 314 equipment. Weekly flights to both terminals of the North Pacific service is planned for later date.

Canada to Make Aviation Gas

Two Canadian firms, Imperial Oil Ltd. and British American Oil Co. Ltd., are planning to make high test aviation gasoline in Calgary, Alberta. A high octane product, it has been reported, can be obtained from Turner Valley crude oil without importation of any other raw materials.

No estimate of production at either plant has been made.

Rihi III

George L. Rihi, vice-president of the Pan American Airways System, has been seriously ill in New York City. He is vice-president of Pacific Alaska Airways Inc. and of Pan American-Grace Airways Inc.

AQ and OL Celebrate New 231-Mile Link

Inauguration of Braniff Airways' new Oklahoma City-Amarillo service turned out to be a civic celebration in the two southwestern cities with both communities working hard to promote air mail on the new service. During the week the new route was opened, Oklahoma City observed its "Heads Up Week" annual community celebration. Opening day of the week was designated "Amarillo Day." Not to be outdone, Amarillo proclaimed the same week as "Oklahoma City Week" throughout the Texas Panhandle. Music for the occasions was furnished by Braniff's singing hostesses and troubadours. The hostesses were (above, left to right) Jean Agar, Anne Rightmire and Della Hurt.

The new 231-mile service is shown on the accompanying map. Braniff flights connect at Amarillo with TWA and at Oklahoma City with American Airlines.



— NEW BRANIFF ROUTE
— ORIGINAL BRANIFF ROUTES
- - - CONNECTING AIRLINES

The Olympics of Aviation!

MIAMI'S sunny skies beckon America's aviation fraternity to another great aerial meeting. See arrival of contestants in the rich Macfadden On-to-Miami race—the nation's premier cross-country event. Fly to Miami in the annual lightplane cavalcade. Thrill with the acts of daring aerobatic 'aces. Enjoy aviation's greatest round of social activity — fun for all! Visit Miami's first annual Aircraft and Equipment exhibit. Remember — you can't afford to miss AMERICA'S No. 1 AIR SHOW.



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problem by allowing non-commissioned officers to learn to fly, but until that time, until the Air Corps ceases being a young gentlemen's club, some stop-gap must be found. Army flying needs a good selling job done on it."

Able Representatives

THE United States can well be proud of the men it has sent to South America to represent aviation. There is not a single aviation activity more important than the air missions we have sent to various countries in South America. Some of them have been at work for several years but it wasn't until last year and this year that Washington became fully aware of the good these missions can accomplish for mutual benefit of ourselves and our Latin neighbors. Whoever selected the men to go south has done so with rare discretion. Take, for example, Major Thomas White, who heads the Army Air Corps mission to Brazil, and Lt. Col. Ralph H. Wooten, who is the military attaché to Chile—both able, intelligent officers. These men are not singled out because they surpass their colleagues but merely because they are representative of the higher caliber of officials who serve this country.

The United States now has Army Air Corps missions in Argentina, Brazil, Colombia and Chile. There are military attachés in Chile and Peru. The missions, it must be said, are attached to the flying services of the countries to which they are sent, at the invitation of those countries, to aid in any way they can in building up the military aviation organizations.

The Navy has likewise sent able men to South America, men like Comdr. Harry B. Temple in Brazil. And not to be overlooked are the aviation men attached to the commercial attachés in a number of countries, who work through the Motive Products Division of the Bureau of Foreign and Domestic Commerce. Men like Bill Childs in Brazil and Joe Walstrom in Argentina are efficient clearing houses for information on civil and commercial aviation. Their reports to Washington on airlines, manufacturing and private flying, are most valuable and their aid to visitors traveling through those countries is helpful. No men in South America are better informed aviation-wise than these Bureau of Foreign and Domestic Commerce representatives.

It is important that this country be as helpful as possible to the South American countries. It is also important that we send able men down there. The government is not only to be commended for the recognition it is now giving to this important representation, but for the type of men that have been sent. The missing link to date is the few number of aviation people in the United States who have gone to South America. A "must" project on our own calendar is the encouraging of manufacturers, airline executives and aviation men of all types, in making trips to the South American countries. We have too long neglected our neighbors. We should not only visit them but encourage the South Americans to come up here.

Recognition For Air

NEW recognition for the role of air power in our national defense, as reflected in the appointment of Major General H. H. "Hap" Arnold as Deputy Chief of the War Department General Staff, is a most heartening sign. General Arnold has served magnificently as Chief of the Air Corps and no one knows more than the men who have served under him how trying his job has been during the past year. His new post is not only recognition of his own excellent service, but is recognition as well of the importance of the airplane in the broad defense scheme.

Almost as significant in this regard is the promotion of Major General Delos Emmons, commander of the GHQ, to lieutenant general, which places the air combat forces on the same command status as that of the lieutenant generals in command of the four field armies. It is good to see these solid gains for aviation and the country.

United Aircraft to Give

Employees \$400,000 Bonus

Distribution of \$400,000 additional pay to 20,000 employees early in December is planned by United Aircraft Corp. as part of a program for special compensation semi-annually, when circumstances warrant, to all workers not already participating in the incentive compensation or in the group payment

plans now in effect in certain departments.

Eligible employees at East Hartford will receive the equivalent of one and one-half weeks' salary calculated at base rate in effect Oct. 31, exclusive of second and third shifts, special premiums or overtime allowances. To be eligible, workers must have been continuously employed for six months from May 1, 1940, through Oct. 31, and still on payroll at date of payment.

Fortnightly Review

(Continued from page 1)

down by the CAA because it thought it might cost the Post Office Department a little more than air mail revenue during initial years.

And we are not unmindful that Docket No. 19 of the air mail bureau of the Interstate Commerce Commission a few years ago, left a serious belief that the Post Office Department is profiting several millions of dollars annually from the domestic air mail service.

These are serious times, when the private industry of America should not be shackled. With taxpayers facing unprecedented burdens, a few cents for security, paid through the Post Office Department with aid to our commerce as a by-product, is better than dollars in taxation for the War Department with no incidental by-product to aid commerce, through the development and expansion of scheduled air transport.

It is high time that the Civil Aeronautics Board considers these things and adopts a policy of liberation of scheduled transport for national defense.

Pilot Material Shortage

OFFICERS of the Aviation Writers Association have asked the membership of this influential organization to lend a hand to the Army in its efforts to obtain a sufficient number of pilot material. This is an exceptionally worthy project. The Army Air Corps is facing a critical problem. There has been a shortage of candidates for the Air Corps pilot training program and some of the Air Corps areas now are filling their "flying cadet" quotas with difficulty. When these quotas are stepped up actual shortages will exist.

"The draft will serve to fill all other branches of the Army, but a draft cannot make a man fly if he doesn't want to fly," the writers' newsletter states. "Behind the shortage of candidates for training are numerous psychological, economic and political factors, influenced by a lack of proper advertising. One of the basic psychological factors is a deep-seated apprehension over the dangers of flying among the young men who now form a vast reservoir of pilot-power in the United States.

"Whatever the other factors influencing the paucity of the pilot-reservoir, the fact remains that a lack of trainee material remains probably the weakest link in American air rearmament. The results, so far, from the Civilian Pilot Training Program administered by Grove Webster for the CAA, in terms of producing candidates for the Air Corps, have not been encouraging.

"Some solution to the entire problem must be found. Eventually the Army will go a long way toward solving its pilot

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Capital Notes

THE AVIATION INDUSTRY has met the challenge of the defense program with an expansion and rate of production which was not even visualized only so short a time ago as twelve months. This achievement is particularly remarkable since the situation abroad has revised our concepts of adequate air defense as frequently as every two or three months. Even the government and the industry have no positive objective as to the ultimate size of our air forces.

Last March, Congress gave the Army funds for 57 airplanes. Later in the spring, the President spoke of a productive capacity of 50,000, a figure then considered almost fantastic. Today, there are reliable reports that the Chief Executive has been quietly and consistently revising this total upwards until it has now struck the seemingly hysterical number of 125,000 planes. Congress will be asked for vast sums of money to start toward this new goal—one which could not possibly be reached for several years at the earliest. But if world conditions continue to justify a defense machine of the strength now conceived, the industry may well expect to be faced with the demand to undertake and complete such production and do it in as short a time as American energy and ingenuity can provide.

This will not be easy; it is not easy now. Already there are phases of the program which are making the job difficult and in some cases slowing operations beyond necessity. It is a natural condition, however, and one which experience alone can rectify. The only grease for the machinery will have to come from a mutual recognition and understanding of the problems as they exist, and a common interest in solving these problems from the viewpoint of the only really important objective: to turn our defense program from paper plans to planes.

CURRENTLY, THERE ARE THREE factors disturbing the steady flow of production. One is the tedious delay on the part of the government in giving final approval to supply and plant facilities contracts. Manufacturers complain of an undue hesitancy by government officials in making decisions and charge that fears of future Congressional investigations are more important considerations than factual conditions in influencing federal action. One industrialist suggested only half-facetiously that the FBI raid the War and Navy Departments and the Defense Commission and throw all monkey wrenches away.

A second vital problem is the attitude of labor, and in particular the CIO as exhibited by the union's behavior in the Vultee dispute. It is generally believed that although the administration has repeatedly emphasized consideration for labor in connection with the defense program, that no extravagant labor demands will be tolerated. Public support appears strong on this point. Labor Defense Commissioner Hillman apparently is placing high hopes of amicable settlements in his plan to divide the country into some two dozen industrial regions with special defense commission and labor organization headquarters in each for direct and expeditious contact with local situations as they arise.

Funding for defense presents the third problem as bankers increase their complaints that the government, through its various agencies such as the RFC and Defense Plant Corporation, is competing with private financing in the defense loan market. Jesse Jones' statement that only 1½ per cent interest should be charged on loans when the government agrees to make reimbursements over five years caused an immediate cry of protest from the banks. Mr. Jones based his policy on the theory that government reimbursement has the same value as a government guarantee. But many bankers disagree, charging that defense loans entail risks not involved in the usual government guaranteed obligation. This situation thus requires a lot of straightening out before financing arrangements can be expected to progress smoothly.

* * *

CONGRESS AND THE TREASURY are already beginning preliminary studies looking toward a new tax bill next year with present indications pointing toward a probable attempt to make non-defense appropriations correspond more closely than during the past few years with incoming revenues.

Aviation appropriations are not likely to suffer to any extent, if at all, however, since even civil aviation projects are recognized as closely related to the defense program. Thus Congress will be more inclined to approve additional airports, weather aids to air, and similar requests than relief and other purely domestic items.

The new tax bill will have one vital effect on civil aviation, however, when the question matures as to taxation of commercial airlines. Allowed favored treatment in the excess-profits tax law this year, the airlines may have a different fate depending upon developments over the next few months. CAB's conference with airline executives in early December, as a prelude to a thorough review of rate making procedure, is expected to show which way the signs will point from now on—whether the airlines will be treated as precocious youngsters who still need government protection, or as adults now able to stand alone.

* * *

A CIVIL AIR RESERVE can be expected to develop out of the talk-stage into a real program within the next few months. Endorsed by the National Aeronautical Association, the subject is now under close study by the Aeronautical Advisory Council of the Commerce Department which will make definite recommendations for organization of private flyers into a formal civil reserve unit. Many details are yet to be decided before the program is launched, particularly that of how such a reserve will fit in to the general aviation picture. Suggestions include one providing for a special board within the CAA to direct and administer the program, another that the civil air reserve be created under state jurisdiction similar to the Home Guard.

* * *



The grasshoppers got me!

Folks Worth Meeting—

(Editor's Note: Dick Shaw, popular cartoonist of subjects aeronautical, has submitted his life story for "Folks Worth Meeting" and the editor has chosen to print it in Shaw's own words to preserve the interesting style. Shaw also prepared the accompanying self-portrait to illustrate the writing. At the top of this page is one of his latest cartoons which appear frequently in AMERICAN AVIATION.)

I WAS born in Vancouver, Wash., 24 years ago. In my early childhood I spent most of my time at the airport in Vancouver where many of the early flyers as Vance Breese, Tex Rankin, used to fly.

My grade and high school days were spent at the Moran School for Boys in Seattle where I filled all my textbooks with drawings of airplanes.

After being graduated from Moran School (1935), I attended the Cornish Art School in Seattle and during that year I sold my first cartoon to Collier's. Thinking that I was America's No. 1 cartoon success, I decided to go to Chicago and live in a penthouse. Upon my arrival in Chicago, I was stricken with an acute case of competition and didn't sell a cartoon for two years. During this time I attended the Chicago Art Institute.

After leaving the Chicago Art Institute to begin my career as a cartoonist, I have been quite successful in contributing to Saturday Evening Post, Collier's, AMERICAN AVIATION, Airlines, Popular Aviation and Flying, TWA Skyliner and others.

Last year I acquired a wife and a farm in Wisconsin but had to give up the farm because all my time was taken to returning the neighbors' stray cows.

Moved to Burbank for atmosphere and now spend most of my time running out-of-doors to get a glimpse of the Lockheed XP-38 of which I have yet to get a glimpse.

My flying experience consists of two trips from Seattle to New York City via Non-Revenue (Dear Dead Memories). Also a few hours of instruction. Never soloed.

Get most of my inspirations at the airport listening to the gents exchange yarns—tame tales compared



Dick Shaw

to the ones I used to hear at the Vancouver Airport back in 1925.

Am the proud possessor of a spruce spar from an ill-fated plane that attempted an epic flight from Portland, Ore., to Seattle (200 mi.) that my father found in a forest about 25 years ago. Also a cigarette that was brought to Vancouver via North Pole by some non-stop Russian flyers. It was given to me by Mrs. George Marshall, wife of the chief of staff of the U. S. Army.

Because of the great future in aviation, I have specialized in aeronautical cartoons and will present an aviation newspaper feature soon. (Dear Ed: I'm very sorry about this horrible thing I have written—I was drawing airplanes when the English composition was passed out.)

Very truly yours,
DICK S.

Lincoln Institute Expands

Expansion and new equipment program costing \$200,000 is nearing completion at Lincoln Aeronautical Institute, Lincoln, Neb., providing 50,000 sq. ft. additional floor space for classrooms, laboratories and shops. Four hundred men are now enrolled and arrangements are being completed for 600 students by January.

New Aero Engineer Course

Westwood School of Aeronautics, Los Angeles, Cal., has announced a new "conversion" course for preparing experienced engineers and draftsmen from related fields for work as aeronautical engineers. Head of Westwood is Gordon D. Brown, domestic sales manager for Douglas Aircraft Co.



If You Have a Christmas Problem

. . . If there are friends of yours who like to read about aviation . . . whose work or interest is tied up with all that pertains to building and flying airplanes . . .

. . . If there are men whom you know realize the importance of a day to day knowledge of the significant things in this significant industry . . .

. . . And if Christmas finds you wondering what might be best to give them . . . wishing you knew what they might need or what they would be sure to appreciate . . .

. . . If you don't want to go to a lot of bother or expense about it, yet would like to do something for them a bit out of the ordinary . . .

. . . May we suggest that it's hard to find anything more appreciated and more appropriate than AMERICAN AVIATION twice every month all through the year.

Why not get the whole problem out of the way easily and satisfactorily by jotting down, in the space below, the names of all these people . . . whether there are a dozen or only one or two. We'll take care of everything . . . checking to notify you if they already subscribe . . . sending them an attractive announcement of your gift . . . and making sure that a special copy of AMERICAN AVIATION reaches them at Christmas time.

SPECIAL CHRISTMAS RATES

1 Gift Subscription	\$3.00	2 Gifts (or a Two Year Subscription)	\$5.00
3 Gift Subscriptions	\$7.50	Each Additional Subscription	\$2.00

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Please enter my own {^{renewal}_{new}} subscription at these same rates:

Name Address City & State

Enclosed is \$..... in full payment.

Please bill me after January 1.



Secretly Developed



An electrically controlled automatic pilot and a radio navigational device are incorporated in the new Harvey Radio Directional Control, recently placed in production by Harvey Machine Co. of Los Angeles. New equipment has the feature of restricting the sight of a plane to an extremely sharp course. The instrument has been secretly developed over a period of years. Weight of complete equipment is said to be less than that of radio controls now in use.

Lawrence Corp. Develops
Lightweight Prime Mover

Charles L. Lawrence, president of Lawrence Engineering and Research Corp. of Linden, N. J., has announced the development of a small air-cooled engine, designed for use as a prime mover for auxiliary powerplants in large aircraft. Government orders have been received and production of a 5 K. W. model for the Navy Dept. is in process.

Personnel of the corporation, in addition to Lawrence, includes Hugo Rutherford, general manager; Norman N. Tilley, chief engineer; Richard Uhl, treasurer; Silas C. Snyder, sales manager; John K. Munningham, production manager.

West Coast Firm To Make
New Combination Indicator

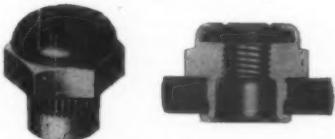
Aircraft Instrument Co. has been organized in Los Angeles, Cal., to manufacture a new turn-bank-position indicator, an instrument developed by Maj. W. K. Burgess, formerly in charge of administration and technical inspection at March Field. Primary purpose of the new device is to replace three instruments now used by combining them into one. Company plans to produce about 180 units monthly, mostly for military use, although eventually cost will be reduced for installation of the product in small private planes.

Maj. Frank E. Benedict, U. S. Army Reserve, is president-general manager, and Maj. Burgess is technical adviser. Some 250,000 shares of \$1 par are being offered through Fairman & Co. to finance the enterprise.

New Clock by Kollsman

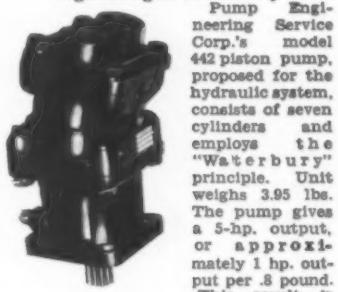
Kollsman Instrument Division of Square D. Co., Elmhurst, N. Y., has announced the development of a new elapsed time aviation clock combining elapsed time and second setting features with the standard Kollsman eight-day aviation clock.

For Sure Fastenings



For fastening sheet-metal assemblies in which the parts must be readily removed and returned to position, this clinch type of self-locking nut with knurled shank has been prepared by Elastic Stop Nut Corp. of Union, N. J. The screw can not work lose, even under the most severe vibration, according to company announcement.

Lightweight Efficiency



Pump Engineering Service Corp.'s model 442 piston pump, proposed for the hydraulic system, consists of seven cylinders and employs the "Waterbury" principle. Unit weighs 3.85 lbs. The pump gives a 5-hp. output, or approximately 1 hp. output per .8 pound.

This result is said to be better than any combustion engine or electric motor now used in aeronautics. Model 442 may be used also as a hydraulic motor for the operation of mechanisms in the same manner as any electrical motor.

New Fuel Tanks for U. S.

Large scale production of self-sealing combat plane fuel tanks made of rubber has been started by B. F. Goodrich Co., which has received national defense orders totaling more than \$2,000,000 for the day.

Developing New Spark Plug

A new aviation spark plug "of radical design" will be announced soon by Hahn Spark Plug Corp. of Hatboro, Pa., the company has revealed. Organization has elected T. T. Ludium executive vice-president; John E. Stewart was elected treasurer; John B. McPherson is vice-president in charge of research and developments. Aviation spark plugs and radio shielded accessories are now being produced.

Self-Heating Aviator Suits

Recent discovery of a new type rubber that conducts electricity has made possible the manufacture of self-heating aviator suits, according to U. S. Rubber Co. Delivery of a number of suits has already been made to the Air Corps.

200% Gain in Space
With Plane 'Stacker'

Three planes can be "stacked" in the area ordinarily occupied by one through use of the new Hangar Space-Saver developed by Uniloy Accessories Corp., Lancaster, N. Y.

Designed to fill the need at airports for a device to permit storage of more light planes without increasing hangar area, the Space-Saver is a combination of three rubber-wheeled cradles into which the craft is easily nested by two men and moved to its storage position. Each set of three cradles is equipped with 12 rubber-tired full swivel casters. Approximately 18 ft. of clearance between floor and roof structure is required.

For hangars without this clearance, Uniloy offers a pair of wheel cradles, permitting the moving and placing of light planes in much tighter formation than is possible when stored in the conventional manner.

Rubber-Steel Armor Ready

An airplane armor plate of rubber and steel, superior in bullet penetration resistance to steel armor plate 20% heavier, has been developed by United States Rubber Co., Detroit, Mich., according to F. B. Davis Jr., president. Use of the new armor material, Davis indicated, will permit turning over to manufacturers weight saving which they can utilize for greater armament, wider armored areas, more speed, greater maneuverability or greater cruising range.

Part and parcel of
American
Aviation Supremacy!



★ Only the tried and proved—only the best—can be trusted to keep

American Aviation's quality supremacy ahead. That is why the army, navy and every airline in America look with confidence to Bendix-Scintilla during this time of greatest need. Confidence in Bendix-Scintilla products—magneto, spark plugs and radio shielding—is a trust that never has and never will be misplaced.

SCINTILLA MAGNETO DIVISION
BENDIX AVIATION CORPORATION • SIDNEY, NEW YORK

BENDIX
SCINTILLA

The world's finest aircraft ignition

Piper Commands 'T' Type Hangar for Private Plane

Municipalities were termed shortsighted in their airplane housing development by W. T. Piper, president, Piper Aircraft Corp., Lock Haven, Pa., criticizing the trend toward construction of large expensive hangars "purely for the purpose of looking imposing and beautiful."

Commenting on the shortage of hangar facilities for private planes, Piper commended the individual "T" type hangar for small craft as a sensible solution to the plane housing problem. "These units, built in interlocking form, can be constructed for less than \$500 a unit and are large enough to accommodate 90% of present type of private aircraft," he declared. "Current hangar rental rates would pay for these units in three years time thus netting the city an honest-to-goodness revenue."

Dallas Extends Airport Control

Control over building activities within 3,000 feet of Love Field can now be exercised by the city of Dallas, Tex., under a special law passed by the state legislature several years ago. City Attorney H. P. Kucera has ruled. The law originally applied only to Houston as it is effective according to city population size, but the 1940 census report brings Dallas within the minimum limit.

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OF FABRIC AND
TAPES FOR THE
AIRCRAFT INDUSTRY



FLIGHTEX

WORLD'S PREMIER FLIGHTEX FABRIC AIRPLANE FABRIC

State Regulation of Air Commerce Predicted for Pa.

Prediction that Pennsylvania's Public Utility Commission soon would regulate intra-state air commerce was made by Commissioner Richard J. Beamish, No. 5. The commission has jurisdiction over commercial transportation by rail, highway and air, but has not yet sought to exercise control over aviation.

Now, however, the Civil Aeronautics Board is pressing for state cooperation in regulating and enforcing safety requirements on "hedge-hoppers" and commercial pilots who carry passengers on unscheduled flights between points within the state, Beamish explained.

"In the twilight zone of jurisdiction between the federal and state governments," he said, "there must be some protection, some insurance, some inspection of non-scheduled flights."

CAB Warns Public Against Riding With Student Pilots

Strong warning urging the public not to ride with student pilots was issued by the Civil Aeronautics Board, Nov. 14.

"Accepting a ride from a student pilot is accepting one of the greatest risks still connected with aviation," the CAB stated. "Last year, more than 40% of the accidents in all civil aviation which resulted in fatalities to passengers occurred when a student pilot was at the controls."

Any student pilot found to have carried passengers, with or without pay, must expect revocation of his pilot certificate, it was declared.

Aviation Enterprises, Houston Air Center, Orders 20 Planes

Aviation Enterprises Inc. of Houston, Tex., reports tentative ordering of 20 new aircraft which will bring to 25 the number available for primary and advanced pilot training. The company, organized June 28 as a training center and distributor of aircraft, occupies two large hangars, shop, five-room office building and two other structures previously used by the Texas National Guard.

Officers are R. E. McKaughan, president, who earlier organized Air Activities Inc. and Texas Fairchild Sales Corp.; Henry E. Kriegel, vice-president; L. D. McKaughan, treasurer.

The firm is associate distributor of Piper Aircraft Corp., Lock Haven, Pa., and plans to handle sales in southwest for Engineering & Research Corp., Riverdale, Md.

Air Training School Classes Begin

Academy of Aeronautics, La Guardia Field, N. Y., has begun day and evening classes in aircraft design, maintenance and construction. Governing officers of the school are identical with those of Casey Jones School of Aeronautics, Newark, N. J., with which it is affiliated.

A Record

Kenny Kress, Piper Aircraft Corp.'s test pilot for six years who has established a record of having tested over 6,000 airplanes, has left Lock Haven, Pa., to take a position with Aviation Funding Corp.

His position with Piper is being taken by Curt Wetzel, a Piper employee for three years, who has served under Kress' tutelage.

ment programs be coordinated by State Director of Aeronautics; (4) that each community consider its relationship to the state plan and, where facilities are justified, cooperate with state director in carrying out plans; (5) that Director of Aeronautics coordinate development plans with those of adjoining states, and (6) that plans for state highway development be studied for adjustments necessary to provide adequate access to landing areas.

Joint expenditures of municipal, state and federal funds for airport improvements from 1933 to May 31, 1940, totaled \$1,096,806, the study disclosed.

Chairman of the advisory committee, which was aided in completion of the report by the New Hampshire Aeronautics Department, is Claude H. Swain, public service commissioner.

Florida is believed to have published the first long-range state aviation development plan when it announced its 10-year program about five years ago.

Michigan Firm Designs

8½-lb. 'Hummer' Starter

The new "Hummer" starter, designed for sportsperson pilots and commercial operators and operated by means of a crank on the instrument panel, is in production by Mechanical Products Inc., 618 N. Mechanic St., Jackson, Mich.

The starter weighs eight and one-half pounds installed, and "simplicity of manufacture keeps the price within popular limits," according to company announcement.

Winter Cruise Announced

Announcement of the 1941 Sportsman Pilots Association Winter cruise from San Antonio, Tex., to Monterrey, Mex., between Feb. 15 and Mar. 15 has been made by C. H. Harrington, secretary.

General cruise committee includes R. C. Oertel, chairman; W. M. Packer, vice-chairman; Harold F. Wood, Harrison Somerville, Henry King, J. W. Beretta, H. L. Kirkpatrick, Earl T. Ricks, Z. T. Mosley and N. E. Meader, Jr.

Edihme Heads R. I. Airmen

Dr. Maurice Edihme has been elected president of the Rhode Island Airmen's Association. Other officers include Albert Tavani, first vice-president; Ernest E. Earle, second vice-president; Ruth E. Jones, secretary; Richard Hohl, treasurer; and Arthur R. Jones, historian.

Take Exhibition Space

First plane exhibitors to sign for space at the Light Airplane Exhibition to be held in the National Sportsmen's Show, Grand Central Palace, New York City, Feb. 15-23, are Safair Inc., New York area Cub distributors; Arents Air Service, Luscombe distributors, and Taylorcraft Aviation Corp. Twelve makes are expected to be on exhibition when the show opens.

Advisory committee for the exhibition includes Alfred B. Bennett, Bennett Air Service, chairman; George Arents and O. P. Hebert, with other members to be added.

Flettner Propeller Approved

Flettner Propeller Co., Grand Rapids, Mich., has received propeller type certificate 754 for Model 78, wood, diameter 6 ft. 6 in., pitch 5 ft. 1 in., 110 and 125 hp. at 2375 rpm.

SPA Board Urges Repeal of Insurance Restrictions

Recommendation has been made by the board of governors of the Sportsman Pilots Association to SPA membership that "this Association seek a conference with the American Actuarial Society in an endeavor to establish that the exclusion clauses in existing life insurance policies affecting non-scheduled flying are unnecessary, detrimental to the services offered by the insurer and to the cause of aviation in general."

R. C. Oertel of Standard Oil Co. of N. J., 26 Broadway, New York City, is chairman of the SPA insurance committee.

Lear's Generator



This easily installed, constant-voltage, wind-driven generator has been developed by Lear Avia Inc., Dayton, O. Total weight of generator and accessories, which include regulator with shock mount, meter, cable, three shielded condensers and miscellaneous small parts such as switches and fuses, is 9.2 lbs. Battery, which is optional, weighs 15 lbs. In the new generator, changes in charging rate are automatically accomplished by the specially developed voltage-regulator.

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Export Representative—
Aviation Equipment & Export
Inc., 25 Beaver St., N.Y.
Cable Address—"Aviexport"

Literature Available

C-O-Two Fire Equipment Co., 10 Elm St., Newark, N. J., is distributing booklet C24, "In Case of Fire," describing uses of carbon dioxide for fire extinguishment. Shows complete line of hand and wheeled type extinguishers, hose systems, recharging equipment, valves and service points.

Eitel-McCullough Inc., San Bruno, Cal., has prepared "Life Preserver for 2 Million People!", a story of "the most vital part of radio communications... the vacuum tube," and its part in safe air travel.

General Electric Co., Schenectady, N. Y., has prepared the following publications: GEA-2753-G-E Instruments and Time Switches; GEA-3020A-Electrostatic Voltmeter; GEA-1755C-G-E Photoelectric Relays and Accessories; GEA-311A-Weld Recorder for Better Spot-Welded Structures.

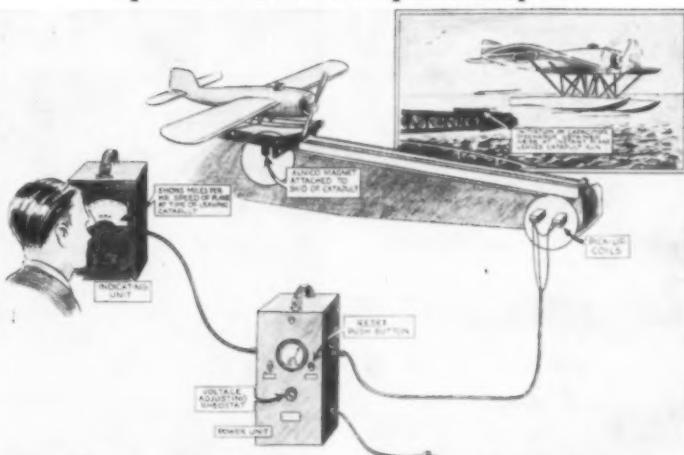
B. F. Goodrich Co., Akron, O., has just published a new 170-page "V-Belt Data Book."

Magnus Chemical Co., Garwood, N. J., has issued a descriptive, illustrated 24-page booklet for aviation use, "The Aviation Cleaning Handbook." Booklet thoroughly describes cleaning methods and materials for use in the maintenance of aircraft, airports, engine shops, etc.

Monsanto Chemical Co., Merrimac Division, Everett Station, Boston, Mass., has available a technical information booklet which describes in detail the Monsanto line of aircraft finishes and which contains information on Army and Navy finish specifications, finishing procedures and upkeep and cleaning of finished surfaces.

Rohm & Haas Co. Inc., 222 W. Washington Square, Philadelphia, Pa., has prepared a new Plexiglas booklet which covers the principal properties and more important applications of cast Plexiglas sheet and Crystalite molding powder. Booklet serves as a guide to those engaged in design, production and selling.

Shakeproof Lock Washer Co., 2501 N. Keeler Ave., Chicago, Ill., has published a "Report of Comparison between

Speed Indicator for Seaplane Catapults

New speed indicator intended to eliminate much of the hazard in catapulting seaplanes from ships has been designed by H. P. Kuehni of General Electric Co., Schenectady, N. Y. With the device it is possible, according to company report, to check the adjustment of a catapult by shooting the skid down the track without risking pilot and plane. If the skid registers the proper speed, the plane can then be placed on the skid and shot off with correct adjustment of compressed

air mechanism driving the catapult. In the past, barrels have been shot into the water to test catapults.

There is no mechanical connection between the catapult skid and the speed indicating equipment, but the instrument responds to discharge of a capacitor, the voltage of which is held constant by a built-in indicator and a simple rheostat in the primary of the charging transformer. In timing planes leaving catapults at 60 mph, the new speed indicator has an accuracy of plus or minus 2%.

Shakeproof Thread-Cutting Screws and Aluminum Rivets as Used in Aircraft Fastenings."

Summerill Tubing Co., Bridgeport, Pa., is distributing a booklet on special-purpose, cold-drawn seamless steel tubing.

U. S. Electrical Motors Inc., Dept. 136, 80-34th St., Brooklyn, N. Y., has prepared literature on the new U. S. Vari-

drive Aero Test-Stand for testing aircraft generators, vacuum pumps, hydraulic pumps, alternators, etc.

Aluminum Price Lowered

Reduction of one cent a pound will be made by Aluminum Company of America, Nov. 18, bringing pound price of Alcoa aluminum ingot to 17c.

Airport Projects Approved

The Administrator of Civil Aeronautics has issued certificates of air navigation facility necessity authorizing the expenditure of federal funds on the following projects:

Avon Municipal Airport, Avon Park, Fla.—\$117,729 for clearing approaches to 30-to-1 glide, extending landing strips to approximately 4,000 ft., paving three runways to 3,750, 4,000 and 4,100 ft. in length, each 100 ft. wide, and paving aprons and taxi strips.

Baltimore Municipal Airport, Baltimore, Md.—\$289,345 for construction of airplane hangar 139 by 250 ft. with 26-ft. headroom and buildings at each side of hangar 32 by 60 to 250 ft. long and two stories high.

Bangor Airport, Bangor, Me.—\$473,333 for construction of runway; excavating; and installing drains, culverts and catch basins.

Municipal Airport, Iowa City, Ia.—\$180,694 for grading and excavating, constructing concrete runways and turning circles, placing blotter coat on existing runway, providing surface and sub-drainage, and installing boundary cables and boundary and runway lights.

Tonopah Airport, Tonopah, Nev.—\$184,770 for construction of all-weather landing strip 6,700 ft. in length and 500 ft. wide, together with development of additional all-way landing area.

Moberly Municipal Airport, Moberly, Mo.—\$129,680 for construction of airport with three main runways, two taxiway approaches and a pre-fabricated hangar.

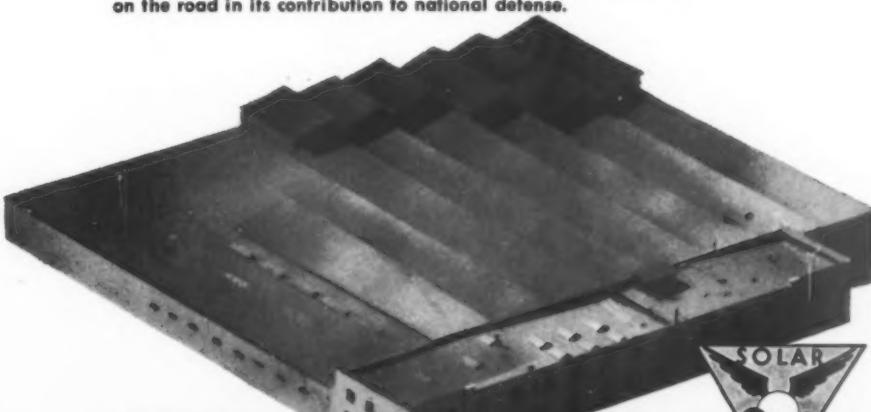
Vibration Control Sought

Purchase and installation of additional vibration-detecting equipment to test Lycoming lightplane engines of 50-70 hp. under actual operating conditions has been announced by S. K. Hoffman, chief engineer of Lycoming Division of Aviation Manufacturing Corp., Williamsport, Pa.

New equipment is reported to make a higher degree of engine smoothness possible, thereby adding to passenger comfort.

SOLAR is prepared for "preparedness"

Solar's newly completed plant expansion, the third in 14 months, now triples the available working space to meet new demands for volume production. Today's delivery schedule, while four times that of a year ago, is but a step on the road in its contribution to national defense.



IT PAYS TO SPECIFY
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SOLAR Aircraft Company
SAN DIEGO, CALIFORNIA • LINDBERGH FIELD
CANADA • Railway & Power Engineering Corp. Ltd., Agents, Montreal

EST 1927

Vega Will Manufacture Larger Bombers for RAF

Vega Airplane Co.'s \$30,000,000 contract from the British government, announced last July, is for twin-engine bombing planes which will be a military counterpart of the 14-passenger commercial Lockheed Lodestar which holds the U. S. coast-to-coast speed record of 9 hrs. 29 min. This news was confirmed in Burbank, Cal., by Lockheed officials on Nov. 19.

The British order, signed with Lockheed, was subcontracted to Lockheed's subsidiary, Vega.

The new bombers will be "bigger, faster and more formidable" than the Lockheed Hudson bombers which have been in use by the RAF. The Hudson is a military version of the Lockheed 14 commercial transport.

Whereas the experimental model of the new bomber is being fabricated at the present Vega factory, mass production will be attained next spring and summer at the new \$3,500,000 plant adjacent to Union Air Terminal, Burbank.

Mass. Airport Booklet

A 92-page booklet "Airports and Landing Fields," with scale drawings and details on 21 airports and 25 landing fields in Massachusetts, has been prepared by the Massachusetts Aero-nautics Commission, Boston Airport.

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MORE VALUE
IN PARKS
TRAINED MEN**



Graduates of Parks Air College are trained to make material contributions to the progress of your business.

The value of Parks graduates is the result of Parks strict adherence to the highest standards—in selection of students as well as the requirements for graduation. Courses are specialized, yet comprehensive in scope, and an understanding of basic principles develops each student's ability to do original and independent thinking.

When you are seeking men who are qualified to serve your industry with distinction, who are equipped to rise to leadership, it will pay you to communicate with Oliver L. Parks, President.

**PARKS AIR
COLLEGE, Inc.**
East St. Louis, Illinois

Expansion

(Continued from page 1)

the Emergency Plant Facility contract.

GRUMMAN

The Navy's contract award to Grumman calls for the acquisition and installation of additional plant equipment and facilities at the company's plant at Bethpage, N. Y., at a total cost estimated at \$3,500,000.

The contract will enable Grumman to add 400,000 sq. ft. of floor space, the addition to be completely equipped for production, including machine tools.

FAIRCHILD AVIATION

Fairchild Aviation Corp. at Jamaica, N. Y., has broken ground for a plant addition of four stories of reinforced concrete. Addition will be a self-contained unit which will represent about \$250,000.

Contract for the operation was let to White Construction Co. Inc. Electus D. Litchfield is the architect in charge.

LOCKHEED

Lockheed Aircraft Corp. is building a \$40,000 addition to its Rowe Ave. plant in Burbank, Cal., it was learned in mid-November.

Employment at Lockheed recently passed the 14,000 mark for the first time in the company's history. There were 14,312 persons employed on Nov. 1, with an average of 90 being hired each day, according to figures released by Robert E. Gross, president. These figures did not include some 2,500 employees of Vega Airplane Co., a subsidiary.

Present monthly payroll is \$2,386,000 and "in our company we are moving steadily toward our goal to have 25,000 men working in three full eight-hour shifts," Gross said.

MENASCO

Menasco Manufacturing Co. in mid-November announced receipt of a \$1,250,000 order for hydraulic struts, boosting company's backlog to \$4,000,000. Deliveries will start in April and continue for 12 months.

Emergency nature of the order and its volume make necessary the immediate building of 30,000 sq. ft. addition to the company's plant at a cost of \$400,000, it was said.

Present payroll of 700 employees at the two Menasco plants is expected to pass 900 when the factory addition is placed in operation.

BENDIX AVIATION

An addition of 150,000 sq. ft. of floor space and the ultimate addition of 1,500 mechanics by Jan. 1 were included in plans announced recently by D. O. Thomas, vice president of Bendix Aviation Corp. at South Bend, Ind.

The addition, cost of which was not disclosed, will permit increased production of aircraft carburetors, landing gear, pilot's seats, hydraulic apparatus, etc.

Construction contracts are held by Austin Co. of Cleveland.

KELLETT AUTOIRO

To expedite work on a greatly increased volume of unfilled orders now totaling more than \$1,000,000, Kellett Autogiro Corp. has occupied an industrial building at 58th St. and Greys Ave., Philadelphia, affording an additional 85,000 sq. ft.

Company expects to continue to operate in its old building near Philadelphia

Routine Scrutiny



Examples of the enormous amount of care and energy devoted by Bell Aircraft Corp.'s laboratory scientists to the cause of airplane quality and safety are shown in the top and lower left pictures. The company's chemical and X-ray laboratories in the Buffalo, N. Y., plant are a part of a program which will enable Bell to make finer and safer airplanes, according to Robert C. Wood, chief design engineer and company physicist.

Lower right is a photo of Bell's new spar milling machine which was designed by company officials to speed production on the P-39 Airacobra pursuit which soon will be delivered to the U. S. Army Air Corps and the Royal Air Force of Great Britain.

Airport, using this structure to house the welding department and an aircraft training school which has been established to train workers for the newly acquired plant. Full operation in the new building will raise Kellett employment rolls to 1,500.

Company is engaged in the production of flaps, tail surface assemblies, engine mounts, seats and other parts for Martin, Curtiss Republic Aviation, Brewster and Consolidated. Autogiro developments continue in cooperation with Army Air Corps technicians.

The RFC recently approved a substantial loan to the company against current contracts.

AERONAUTICAL PRODUCTS

Mounting sales of Aeronautical Products Inc. of Detroit (formerly Machining & Grinding Co.) have moved directors to vote to build an 8,800 sq. ft. addition which officials expect will increase sales by 50%.

Sales of the concern have increased 45% since June 1, and present backlog tops \$1,000,000 for an increase of more than 500% since June 1.

Net sales for the first eight months of 1940 totaled \$298,000 against \$201,195

for all of 1939 and \$94,500 for all of 1938.

THOMPSON PRODUCTS

Present production capacity of Thompson Products Inc. at Cleveland will be expanded "three or four times" for increased output of aircraft valves, park and fuel pumps, W. H. West, assistant factory manager, revealed in mid-November.

Announcement of this plan follows one recent expansion by the company.

Allison

Allison Engineering Division of General Motors Corp. in October delivered 286 liquid-cooled engines. C. E. Wilson, acting GM president, reported on Nov. 19. In September, 223 engines were delivered, following production of 13 in July and 65 in August. Fewer than 100 were manufactured prior to July 1940.

Company officials have predicted that engines will be rolling off the line at the Indianapolis plant at the rate of 1,000 a month by Nov. 1941.

The division a year ago employed 900 men, while 7,200 are now employed

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Flexible Push-Pull Controls
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and other performance-proved products
TO BE SURE—SPECIFY SIMMONDS

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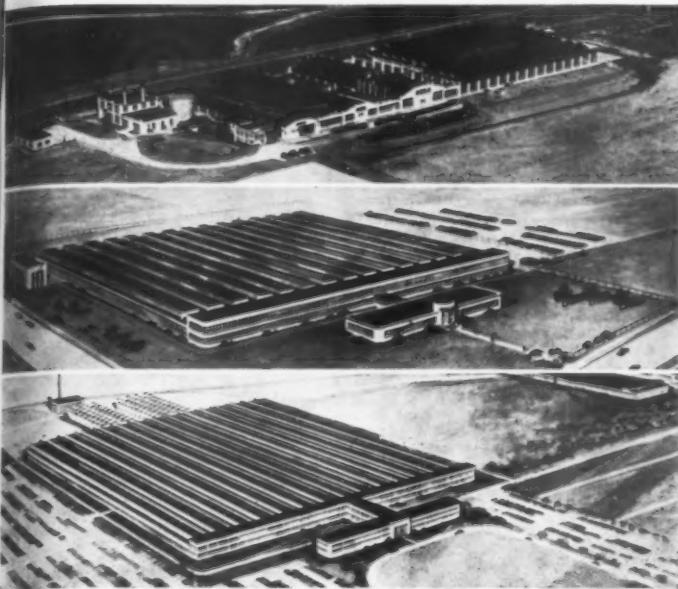
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C-W's Expansion Program Moves



Extensive expansion of plant facilities is being undertaken by Curtiss-Wright Corp. in its various divisions with new factories being located in the mid-west in addition to new building programs now going on at existing locations.

Top photo shows the present St. Louis Airplane Division, which is now being replaced by a modern aircraft factory comprising 1,200,000 sq. ft. of floor space and marking the largest aircraft plant in the middle west. When completed in the spring of 1941, it will be over eight times as large as the present plant which occupies 140,000 sq. ft.

In the center is an architect's drawing of the new Caldwell, N. J., unit of Curtiss Propeller Division of Clifton,

N. J., which is now nearing completion. Supplementing the division's present factories in Clifton and Pittsburgh, it will increase to a total of 590,000 sq. ft. the area made available for the production of Curtiss electric propellers. The division is contemplating establishing a large plant in the middle west.

An architect's drawing (lower photo) of the mammoth \$37,000,000 plant now being erected at Cincinnati, O., by Wright Aeronautical Corp. of Paterson, N. J., as it will appear when completed in the spring of 1941. Occupying 1,694,320 sq. ft. of floor space—with its main building alone providing nearly 35 acres of floor space—it reportedly will be the largest single-story industrial plant ever erected in one unit in the U. S.

because a number of planes ready for delivery were permitted to be sold to Finland.

"Deliveries are starting on the first order from Great Britain for the same basic airplane type," Work said. "Great Britain already has in use similar planes which were originally ordered by Belgium."

Curtiss Aeroplane

At ground-breaking ceremonies in Buffalo for the company's new plant expansion program, it was revealed that Curtiss Aeroplane Division of Curtiss-Wright Corp. is now producing P-40 pursuit planes at the rate of eight daily against six two months ago.

Curtiss officials said they were obtaining deliveries on Allison engines at the rate of between 175 and 200 monthly.

Douglas

While Douglas attack-bombers for the U. S. Army Air Corps. and dive-bombers for the Navy and Marine Corps were rolling off Douglas Aircraft Co.'s production lines, the first group of new DB-7A bombers left Los Angeles Municipal Airport on Nov. 20 for New York, there to be delivered to representatives of England.

At the same time another consignment of 8A-5 attack ships was enroute to Toronto, where Royal Norwegian military units are taking delivery on an order for 36 originally placed by the government of Norway.

Neither the exact route nor the time of arrival at destination was made public for either flight.

Douglas officials disclosed that substantial numbers of additional planes of DB-7 and 8A types are now undergoing final tests and being prepared for delivery.

Solar

Solar Aircraft Co. at San Diego, Cal., has announced receipt of an additional \$725,000 order from Glenn L. Martin Co. and a \$135,000 order from Brewster Aeronautical Corp.

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SERVES 16 CITIES

Aberdeen
Bismarck
Des Moines
Huron
Kansas City
Minneapolis
Minot
Omaha

Ottumwa
Rochester
St. Louis
St. Paul
Sioux City
Sioux Falls
Tulsa
Watertown

THE GREAT PLAINS ROUTE

Manufacturing Space in 1942 Will Total
33,370,822 Sq. Ft., Chamber Reports

In Sept. 1939, when war broke out in Europe, the leading U. S. airplane, engine and propeller factories had a total of 9,123,143 sq. ft. of working space; by mid-November, 1940, this working area had been increased to 16,703,230 sq. ft., according to a finding of a November survey announced by the Aviation News Committee of the Aeronautical Chamber of Commerce.

By 1942, when present expansion programs are completed the grand total will have grown to 33,370,822 sq. ft., an area large enough to house 580 football fields.

So rapidly is the picture of aircraft plant expansion changing that a complete survey in December by Col. J. H. Jouett, president of the Aero Chamber, will be made to keep the nation abreast of progress.

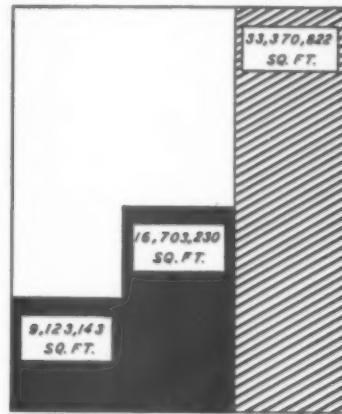
The recent survey showed the following nationwide activity:

On the eastern seaboard and in the midwest are 15 major manufacturers of airplanes, engines and propellers.

The companies manufacturing airplanes in the east have planned or have actually begun construction on expansion projects calling for creation of 4,917,712 sq. ft. of additional working space. In the period between Sept. 1, 1939, and Nov. 15, 1940, these firms increased their floor space from 2,535,000 sq. ft. to 3,597,000 sq. ft. When their expansion programs are completed they will have a grand total of 8,514,712 sq. ft. of working space.

The story is the same among the eastern engine manufacturers:

Floor space, Sept. 1, 1939, 2,030,000 sq. ft.; Nov. 15, 1940, 4,677,000 sq. ft.



1939 NOW 1942

planned or under construction, 3,211,000 sq. ft.; grand total, 7,888,000 sq. ft.

And for the major propeller manufacturers:

Sept. 1, 1939, 370,000 sq. ft.; Nov. 15, 1940, 530,000 sq. ft.; planned or under construction, 550,000 sq. ft.; grand total, 1,080,000 sq. ft.

On the Pacific coast the six leading producers of military aircraft have set an expansion goal that will give them more than 15,000,000 sq. ft. of working space.

In Sept. 1939 the six companies had factories totaling 4,188,143 sq. ft. Today that total has climbed to 7,909,230 sq. ft. When the expansion programs are completed, the total working space of all plants will be 15,888,110.

\$3,000,000 Aircraft Plant
To Be Erected in Canada

The Canadian government has authorized a contract with Fleet Aircraft Ltd., by which a \$3,000,000 aircraft plant will be built at London, Ont.

The factory, which will manufacture training planes, is to be constructed, equipped and owned by the government, but management will be in the hands of Fleet.

2 Join Sales Department

Frank A. Sunderland and Willard Ward have joined the sales department of Taylorcraft Aviation Corp., Alliance, O. Ward is the 20-year-old son of the former president of Ward Baking Co.

Erected Under Pressure



Effective Dec. 15, Aircraft Accessories Corp., manufacturer of hydraulic actuating equipment for aircraft, will be located in its new plant and office building at Burbank, Cal. The new building, containing 46,000 sq. ft., has been erected in record time, due to pressure of meeting production schedules on a backlog of over \$1,600,000. Production is expected to be more than triple by the move from Glendale, Cal., to the new plant. Personnel will be expanded at least 50%, which will bring total employees to near the 400 mark. Land, building and new equipment invested in the plant will approximate \$220,000, it is stated.



Patented
in the
United States
and other
Countries

Contractors to the United States
Army, Navy and Coast Guard
and Aircraft Engine Builders.



Brewster's Chairman



James Work
As newly elected chairman of the board of Brewster Aeronautical Corp., will remain active in the affairs of the company as chief executive officer.

Succeeds Chapline



William D. Kennedy
Service manager of Wright Aeronautical Corp. for the last 12 years, succeeds George F. Chapline, new president of Brewster, as sales manager.

Manager at Columbus



J. A. Williams

Has been appointed manager of Curtiss Aeroplane Division's new aircraft factory now being built at Columbus, O. He joined Curtiss in 1921.

Wright Aero Shifts Executives After Chapline Leaves as Head of Brewster

Major executive changes within Wright Aeronautical Corp.'s organization were announced in mid-November by Myron B. Gordon, vice-president and general manager, following the resignation of George F. Chapline who was elected president of Brewster Aeronautical Corp. on Nov. 12, as reported in AMERICAN AVIATION, Nov. 15.

Chapline, who was vice-president in charge of sales at Wright, succeeds James Work in the Brewster organization, Work having been elected chairman of the board of directors.

Additional new Brewster officers are Dayton T. Brown, vice-president in charge of experimental and research development, and William T. Smith, vice-president in charge of materiel.

At Wright Aeronautical, William D. Kennedy, service manager for the last 12 years, succeeds Chapline as sales manager, according to Gordon's announcement.

In addition, Philip B. Taylor, chief engineer, was appointed assistant general manager.

P. W. Brown, general superintendent, was promoted to assistant works manager, and Raymond W. Young, former assistant chief engineer, was appointed to the office of chief engineer to succeed Taylor.

Both Gordon and G. W. Vaughan, president of Curtiss-Wright Corp. and Wright Aeronautical, expressed "great regret" over Chapline's departure from the organization where the latter had headed sales activities for the last 10 years.

"Much as we of Wright Aeronautical regret seeing him go," continued Gordon, "we are proud that he has been selected to assume the presidency of one of the most progressive younger airplane companies in the industry."

Kennedy, the new sales manager, assisted in installing the present inspection and maintenance systems of the Army Air Corps before joining Wright in 1928.

The new assistant general manager, Taylor, joined Wright in 1922 as a test engineer after being associated with several companies as machinist and engineer.

Brown, the new assistant works manager, originally joined Curtiss Aeroplane in 1917 and in 1930 was placed in charge of experimental and manufacturing by the Wright organization.

Young joined Wright as a test engineer in 1925. After a series of changes he was appointed assistant engineer in 1935, and was promoted to assistant chief engineer early in 1940.

"Under our new set-up," said Gordon, "both Mr. A. Amundsen, works manager, and Mr. Brown, assistant works manager, will be relieved of more of the details they have heretofore handled so as to be free to devote more time to the manufacturing problems of our entire corporation, including our new Cincinnati division and various companies who are cooperating with us in meeting our share of the national effort for defense."

Williams Will Head Curtiss Aeroplane's New Columbus Unit

Appointment of J. A. Williams, former assistant to the vice-president and general manager of Curtiss Aeroplane Division of Curtiss-Wright Corp., at Buffalo, N. Y., as manager of the organization's new aircraft factory now being built at Port Columbus, Columbus, O., was announced Nov. 16 by Burdette S. Wright, vice-president and general manager of the corporation's airplane divisions.

Williams joined the Curtiss organization at Garden City, L. I., in 1921, was transferred to the Buffalo unit in 1931 and has since served as assistant to the general manager of that plant. In this role he has seen Curtiss Aeroplane Division develop from an organization employing only a few hundred employees to one now employing approximately 9,000 persons, and which is being expanded to include about 45,000 workers.

Williams is a native of Baltimore, obtained technical training in Baltimore Polytechnic Institute and Massachusetts Institute of Technology, being graduated from the latter in 1918.

The new Columbus plant of which he will be manager will employ approximately 12,000 persons.

L. E. Reisner Resigns Stinson Managership to Head New Company

L. E. Reisner, who has been general manager of Stinson Aircraft Division of Aviation Manufacturing Corp., which recently was purchased by Vultee Aircraft Inc. as part of the expansion program underway by Vultee, resigned his connection with Vultee, effective Nov. 15.

Reisner announced that he will take a position as president of Tennessee Aircraft Institute Inc., a newly formed Nashville corporation which will be engaged in the training of workers for the aircraft industry and the manufacture of airplane parts on subcontract for aircraft manufacturing companies.

Lockheed-Vega Appoint General Purchasing Agent; 2 Section Chiefs Named

Appointment of Roger Lewis as general purchasing agent for Lockheed Aircraft Corp. and Vega Airplane Co. was announced recently by R. A. Von Hake, vice-president in charge of manufacturing.

At the same time, the appointment of Robert Harlow as head of the field service section, and George Kipe in charge of the customer information section, was announced by Reagan Stunkel, manager of Lockheed's customer service division.

Lewis, a graduate of Stanford University, was first employed by Lockheed in 1934. In 1936 he was transferred to the purchasing department of which he is now the head.

Harlow has been with Lockheed 19 months, after having served two years at Douglas Aircraft, one year as American Airlines' service mechanic, and five years as service mechanic with Bowen Air Lines of Ft. Worth, Texas.

Kipe was engaged in administrative work for the DuPont companies and joined the Lockheed customer service division at the time it was organized in 1936.

Promotion for Cozzens

George F. Cozzens has been appointed advertising manager of the tire division of B. F. Goodrich Co., Akron, O. Associated with Goodrich since 1934, Cozzens has been advertising and sales promotion manager of the company's associated tire lines division since 1938.

Brewster's President



George F. Chapline
Newly elected president of Brewster Aeronautical Corp., formerly was vice-president in charge of sales of Wright Aeronautical Corp.

Assistant to Gordon



Philip B. Taylor

Wright Aeronautical's chief engineer has been appointed assistant general manager of the Paterson, N. J., organization, working with Myron B. Gordon.

New Brewster V. P.



William L. Smith

Formerly with Western Electric, Brewster Aeronautical's new vice-president in charge of materiel, He will handle company's subcontracting.

William F. Wise Named Executive V. President of Aviation Mfg. Corp.

William F. Wise, president of Republic Aircraft Products Corp., a division of Aviation Corp., has been appointed executive vice-president of Aviation Manufacturing Corp. Harry Woodhead, president, announced on Nov. 19.

Wise, Woodhead said, will continue to head activities of Republic Aircraft Products at Detroit in addition to assuming his new duties which will be the supervision of activities of Aviation Manufacturing Corp.'s two divisions, Lycoming (engines and propellers) and Spencer Heaters (boilers and heaters), both located at Williamsport, Pa.

In 1921, Wise, with others, started Ex-Cell-O Corp., Detroit, which developed as one of the largest companies specializing in the production of aircraft precision parts. His first job with Ex-Cell-O was production engineer and later he was appointed vice-president and sales manager. He was with the company for more than 15 years when he started his own organization, Republic Aircraft Products, in Detroit, with 12 employees.

Today, Republic employs more than 300 persons and turns out precision parts for Wright, Pratt & Whitney, Curtiss Aeroplane, Curtiss Propeller, Allison, Hamilton Standard and others.

Manville Quits Monocoupe; Accepts New Directorship

H. Edward Manville, Jr. has resigned as vice president, treasurer and director of Monocoupe Aeroplane and Engine Corp., Orlando, Fla.

He was recently elected a member of the board of directors of Johns-Manville Corp.

AIRCRAFT

Consolidated Aircraft Corp., San Diego, Cal., 11/9; airplanes, \$75,313,000 (War). Consolidated Aircraft Corp., San Diego, Cal., 11/15, airplanes, \$18,529,500 (Navy). Curtiss Aeroplane Div., Curtiss-Wright Corp., Buffalo, N. Y., 11/16, airplanes, \$29,139,793 (Navy).

MISCELLANEOUS

Pioneer Parachute Co. Inc., Manchester, Conn., 10/23, parachutes & pack assemblies, \$307,508 (Air Corps).

Switlik Parachute & Equipment Co., Trenton, N. J., 10/23, parachutes & pack assemblies, \$417,622 (Air Corps).

Irving Air Chute Co. Inc., Buffalo, N. Y., 10/23, parachutes & pack assemblies, \$466,065 (Air Corps).

Jack-Heinz Ltd., Palo Alto, Cal., 10/23, starter assemblies, \$2,535,367 (Air Corps).

Kollman Instrument Div., Square D Co., Elmhurst, N. Y., 10/25, compasses, \$5,811 (Navy).

Bendix Products Div., Bendix Aviation Corp., South Bend, Ind., 10/26, aircraft armament, \$12,671,030 (Air Corps).

Bell Aircraft Corp., Buffalo, N. Y., 10/26, armament equipment, \$229,245 (Air Corps).

Vultee Aircraft Inc., Downey, Cal., 10/26, airplane maintenance parts, \$327,792 (Air Corps).

Pratt & Whitney Aircraft Div., United Aircraft Corp., E. Hartford, Conn., 10/26, airplane maintenance parts, \$141,256 (Air Corps).

Pratt & Whitney Aircraft Div., United Aircraft Corp., E. Hartford, Conn., 10/26, airplane maintenance parts, \$491,203 (Air Corps).

Variety Aircraft Corp., Dayton, O., 10/26, standard assemblies, \$115,200 (Air Corps).

Standard Steel Works, N. Kansas City, Mo., 10/26, standard assemblies, \$178,850 (Air Corps).

Star Machine Manufacturers Inc., New York, 10/26, switch assemblies, \$207,150 (Air Corps).

Air Cruisers Inc., Clifton, N. J., 10/26, oxygen apparatus, \$62,300 (Air Corps).

Pausin Engineering Co., Newark, N. J., 10/26, booster coils, \$60,588 (Air Corps).

Eclipse Aviation Div., Bendix Aviation Corp., Bendix, N. J., 10/26, switch assemblies, \$36,631,167 (Air Corps).

Goodyear Tire & Rubber Co. Inc., Akron, O., 10/26, pneumatic rafts, \$582,000 (Air Corps).

American Gas Accumulator Co., Elizabeth, N. J., 10/26, floodlighting units, \$116,481 (Navy).

Standard Oil Co. of California, San Francisco, Cal., 10/26, aircraft engine fuel, \$40,500 (Air Corps).

Standard-Vacuum Oil Co., Manila, P. I., 10/26, fuel & oil, \$55,761 (Philippine Air Depot).

Kollman Instrument Div., Square D Co., Elmhurst, N. Y., 10/26, compasses, \$5,811 (Navy).

Grimes Manufacturing Co., Urbana, O., 10/29, landing lamp assemblies, \$232,530 (Air Corps).

Gem City Sheet Metal & Manufacturing Co., Dayton, O., 10/29, landing lamp assemblies, \$36,560 (Air Corps).

Air Cruisers Inc., Clifton, N. J., 10/29, pneumatic rafts, \$396,750 (Air Corps).

Bausch & Lomb Optical Co., Rochester, N. Y., 10/29, aircraft binoculars, \$41,500 (Navy).

Spencer Lens Co., Buffalo, N. Y., 10/29, aircraft binoculars, \$38,250 (Navy).

Pratt & Whitney Aircraft Div., United Aircraft Corp., E. Hartford, Conn., 10/30, airplane engines, \$26,791,496 (Navy).

Pratt & Whitney Aircraft Div., United Aircraft Corp., E. Hartford, Conn., 10/30, airplane engines, \$32,699,207 (Navy).

Cheney Brothers, Manchester, Conn., 10/30, parachute silk, \$51,430 (Navy).

NEW YORK STOCK EXCHANGE

	Week Ended Nov. 9	Net	Week Ended Nov. 16	Net	Week Ended Nov. 23							
	High	Low	Change	Sales	High	Low	Change	Sales				
American Airlines	65	60 ¹ / ₂	+1 ¹ / ₂	6,700	64 ¹ / ₂	60 ¹ / ₂	-3 ¹ / ₂	4,900	60 ¹ / ₂	59 ¹ / ₂	+1 ¹ / ₂	2,600
Aviation Corp.	57 ¹ / ₂	47 ¹ / ₂	+1 ¹ / ₂	48,000	6	51 ¹ / ₂	-1 ¹ / ₂	32,900	53 ¹ / ₂	3	-1 ¹ / ₂	11,400
Bendix Aviation	35	32 ¹ / ₂	+1 ¹ / ₂	26,800	34 ¹ / ₂	33	-1 ¹ / ₂	9,900	33 ¹ / ₂	32 ¹ / ₂	+1 ¹ / ₂	8,100
Boeing Airplane	18 ¹ / ₂	16 ¹ / ₂	+1 ¹ / ₂	36,800	21	18 ¹ / ₂	+1 ¹ / ₂	65,000	19 ¹ / ₂	18 ¹ / ₂	-1 ¹ / ₂	21,500
Consolidated Aircraft	25 ¹ / ₂	21 ¹ / ₂	+2 ¹ / ₂	6,600	27 ¹ / ₂	24 ¹ / ₂	-1	10,000	25 ¹ / ₂	23 ¹ / ₂	..	3,000
Continental Motors	4	3 ¹ / ₂	+1 ¹ / ₂	41,900	4 ¹ / ₂	3 ¹ / ₂	-1 ¹ / ₂	80,800	4	3 ¹ / ₂	-1 ¹ / ₂	13,000
Curtiss-Wright	10 ¹ / ₂	8 ¹ / ₂	+2 ¹ / ₂	173,600	10 ¹ / ₂	9 ¹ / ₂	-1 ¹ / ₂	130,900	10 ¹ / ₂	9 ¹ / ₂	..	39,700
Curtiss-Wright A	30	28 ¹ / ₂	+1 ¹ / ₂	12,100	30	29	-1 ¹ / ₂	5,600	29 ¹ / ₂	27 ¹ / ₂	-1 ¹ / ₂	4,900
Douglas Aircraft	90	82 ¹ / ₂	+2	26,800	80 ¹ / ₂	5	-2 ¹ / ₂	10,300	82 ¹ / ₂	80	+1 ¹ / ₂	4,300
Eastern Air Lines	39 ¹ / ₂	34 ¹ / ₂	+1 ¹ / ₂	20,000	39	36	-2 ¹ / ₂	14,300	36 ¹ / ₂	34 ¹ / ₂	-1 ¹ / ₂	9,200
Ex-Cell-O	32 ¹ / ₂	28 ¹ / ₂	+1 ¹ / ₂	9,700	32 ¹ / ₂	30 ¹ / ₂	-1 ¹ / ₂	3,100	30 ¹ / ₂	29 ¹ / ₂	+1 ¹ / ₂	1,800
Grumman Aircraft Eng.	19 ¹ / ₂	16 ¹ / ₂	+1 ¹ / ₂	6,200	20 ¹ / ₂	17 ¹ / ₂	-1	7,500	18 ¹ / ₂	17 ¹ / ₂	+1 ¹ / ₂	1,700
Lockheed Aircraft	32 ¹ / ₂	28 ¹ / ₂	+2 ¹ / ₂	41,800	33 ¹ / ₂	30 ¹ / ₂	-1 ¹ / ₂	44,300	31 ¹ / ₂	29 ¹ / ₂	+1 ¹ / ₂	15,200
Glenn L. Martin	35 ¹ / ₂	31 ¹ / ₂	+2	32,800	35 ¹ / ₂	33 ¹ / ₂	-1 ¹ / ₂	24,300	34 ¹ / ₂	32 ¹ / ₂	+1 ¹ / ₂	9,800
Natl. Aviation Corp.	12 ¹ / ₂	10 ¹ / ₂	+1 ¹ / ₂	6,600	13 ¹ / ₂	11 ¹ / ₂	-1 ¹ / ₂	7,400	11 ¹ / ₂	11 ¹ / ₂	+1 ¹ / ₂	2,800
N. American Aviation	18 ¹ / ₂	16 ¹ / ₂	+1 ¹ / ₂	31,600	19 ¹ / ₂	17 ¹ / ₂	-1 ¹ / ₂	33,700	18 ¹ / ₂	17 ¹ / ₂	+1 ¹ / ₂	11,100
Pan American Airways	17 ¹ / ₂	15 ¹ / ₂	+1 ¹ / ₂	16,700	18 ¹ / ₂	16 ¹ / ₂	+1 ¹ / ₂	20,100	17 ¹ / ₂	16	+1 ¹ / ₂	6,700
Sperry Corp.	43 ¹ / ₂	40 ¹ / ₂	+1 ¹ / ₂	10,500	43 ¹ / ₂	42 ¹ / ₂	-1 ¹ / ₂	7,100	43	42	..	5,000
Square D Co.	34 ¹ / ₂	33 ¹ / ₂	..	3,900	34 ¹ / ₂	32 ¹ / ₂	-1	2,800	33 ¹ / ₂	32 ¹ / ₂	+1 ¹ / ₂	900
Thompson Products	35 ¹ / ₂	32 ¹ / ₂	+1 ¹ / ₂	3,400	35 ¹ / ₂	34	-1 ¹ / ₂	1,500	34 ¹ / ₂	33 ¹ / ₂	+1 ¹ / ₂	2,500
TWA	19 ¹ / ₂	17 ¹ / ₂	+1 ¹ / ₂	3,200	20 ¹ / ₂	18 ¹ / ₂	-1 ¹ / ₂	5,800	19 ¹ / ₂	18 ¹ / ₂	+1 ¹ / ₂	1,200
United Aircraft	44 ¹ / ₂	40 ¹ / ₂	+2 ¹ / ₂	26,800	47	45	+1 ¹ / ₂	31,400	46 ¹ / ₂	45	..	14,900
United Air Lines	19 ¹ / ₂	17 ¹ / ₂	-3 ¹ / ₂	23,900	19 ¹ / ₂	18	-1 ¹ / ₂	18,200	18 ¹ / ₂	17 ¹ / ₂	+1 ¹ / ₂	5,600
Wright Aeronautical	110	102	+7	170	111	107	-3	120	108	106	-1	200

NEW YORK CURB EXCHANGE

	Week Ended Nov. 9	Net	Week Ended Nov. 16	Net	Week Ended Nov. 23							
	High	Low	Change	Sales	High	Low	Change	Sales				
Aero Supply A	21 ¹ / ₂	21 ¹ / ₂	+1 ¹ / ₂	100	..	..	..	5,000	21 ¹ / ₂	21 ¹ / ₂	+1 ¹ / ₂	400
Aero Supply B	6 ¹ / ₂	5 ¹ / ₂	+5	7,600	6 ¹ / ₂	6 ¹ / ₂	..	300	6 ¹ / ₂	6 ¹ / ₂	+1 ¹ / ₂	3,000
Air Associates	12	11	+1 ¹ / ₂	400	12	12	..	..	12	11	+1 ¹ / ₂	..
Air Investors	2 ¹ / ₂	2 ¹ / ₂	+1 ¹ / ₂	200	2 ¹ / ₂	2 ¹ / ₂	..	300	2 ¹ / ₂	2 ¹ / ₂	+1 ¹ / ₂	400
Air Investors cv pf	23 ¹ / ₂	23	+1 ¹ / ₂	300	25	25	+1 ¹ / ₂	200	21 ¹ / ₂	21 ¹ / ₂	+1 ¹ / ₂	400
Air Investors war	..	..	..	..	..	..	..	100	..	..	..	..
Aviation & Transp.	33 ¹ / ₂	29 ¹ / ₂	+1 ¹ / ₂	8,700	33 ¹ / ₂	31 ¹ / ₂	-1 ¹ / ₂	21,100	4	3 ¹ / ₂	+1 ¹ / ₂	21,200
Beech Aircraft	5 ¹ / ₂	4 ¹ / ₂	+2	4,200	5 ¹ / ₂	5 ¹ / ₂	-1 ¹ / ₂	2,700	5 ¹ / ₂	4 ¹ / ₂	-1 ¹ / ₂	1,100
Bell Aircraft	23	20	+1 ¹ / ₂	4,600	24 ¹ / ₂	21 ¹ / ₂	-1 ¹ / ₂	4,300	22 ¹ / ₂	21	+1 ¹ / ₂	2,100
Bellanca Aircraft	4 ¹ / ₂	4 ¹ / ₂	+1 ¹ / ₂	2,000	5 ¹ / ₂	4 ¹ / ₂	+1 ¹ / ₂	1,500	5	4 ¹ / ₂	+1 ¹ / ₂	900
Breeze Corp.	6	5 ¹ / ₂	+1 ¹ / ₂	1,300	6 ¹ / ₂	6 ¹ / ₂	+1 ¹ / ₂	1,100	6 ¹ / ₂	6 ¹ / ₂	+1 ¹ / ₂	1,500
Brewster Aero	11 ¹ / ₂	9 ¹ / ₂	+1 ¹ / ₂	7,400	12 ¹ / ₂	11 ¹ / ₂	+1 ¹ / ₂	31,100	12 ¹ / ₂	11 ¹ / ₂	+1 ¹ / ₂	6,100
Canadian Colonial	6 ¹ / ₂	5 ¹ / ₂	+1 ¹ / ₂	1,300	6 ¹ / ₂	5 ¹ / ₂	-1 ¹ / ₂	3,800	6 ¹ / ₂	5 ¹ / ₂	+1 ¹ / ₂	500
Fairchild Aviation	10 ¹ / ₂	9 ¹ / ₂	+1 ¹ / ₂	1,400	11 ¹ / ₂	10 ¹ / ₂	+1 ¹ / ₂	2,700	10 ¹ / ₂	10 ¹ / ₂	+1 ¹ / ₂	1,300
Fairchild Eng. & Air	4 ¹ / ₂	4	+1 ¹ / ₂	5,900	4 ¹ / ₂	4 ¹ / ₂	-1 ¹ / ₂	4,800	4 ¹ / ₂	4 ¹ / ₂	+1 ¹ / ₂	3,100
Irving Air Chute	15 ¹ / ₂	14	+1 ¹ / ₂	900	16 ¹ / ₂	14 ¹ / ₂	-1 ¹ / ₂	800	15	14 ¹ / ₂	+1 ¹ / ₂	200
Penn-Central Airlines	16	14 ¹ / ₂	+1 ¹ / ₂	7,600	16 ¹ / ₂	15	-1 ¹ / ₂	7,700	15 ¹ / ₂	14<		

Washington Financial Review

Financial Reports

AVIATION CORP.—Report for nine months ended Aug. 31 shows net profit of \$72,855, after depreciation, federal income taxes, etc., equal to 2c each on 3,951,667 capital shares then outstanding. Compares with net loss of \$1,324,-047 for nine months ended Aug. 31, 1939. For third quarter, ended Aug. 31, net profit was \$362,079 including \$407,-561 gain in sale of assets of Stinson and Barkley-Grow Divisions of Aviation Mfg. Corp. to Vultee Aircraft Inc. Net loss for August quarter 1939 was \$323,840.

Consolidated income account of company and subsidiaries for nine months ended Aug. 31, 1940: Net sales \$3,279,688; cost and expenses \$3,834,829; loss \$555,-141; other income \$227,243; other deductions \$36,149; federal income taxes \$5,549; extraordinary credits \$442,449.

AIRPLANE MFG. & SUPPLY CORP.—Company announces net profit for six months ended Aug. 31 of \$26,664, after all charges including provision for federal income and excess profits taxes, equal to slightly more than 9c each on 279,800 outstanding capital shares.

TAYLORCRAFT AVIATION CORP.—Nine months to Sept. 30 net income before excess profits tax \$50,635, equal after preferred dividends, to 3c each on 198,344 shares \$1-par common stock.

FAIRCHILD AVIATION CORP.—Report to stockholders for nine months ended Sept. 30 shows net earnings \$422,031, after 40% deduction from period earnings to cover federal income and excess profits taxes, comparing with 1939 period net earnings of \$295,-512 after 20% tax provision. Earnings through Sept. 1940, equal \$1.25 each, on 337,032 capital shares.

CURTISS-WRIGHT CORP.—Consolidated net profit for nine months ended Sept. 30 of \$8,305,639, after depreciation, reserves, federal income and excess profits taxes of \$11,932,022, equal to 88c each on 7,431,796 common shares \$1-par after dividend requirements on 1,158,464 shares \$2 non-cumulative Class A stock. For nine months ended Sept. 30, 1939, net profit was \$4,543,552 or 38c each on 7,429,118 common shares. Taxes for that period amounted to \$1,121,497.

WRIGHT AERONAUTICAL CORP.—Company reports consolidated net profit for nine months ended Sept. 30 of \$3,806,952, after depreciation, reserves and provision of \$5,723,286 for federal income and excess profits taxes, equal to 66c each on 599,857 capital shares. This compares with \$2,878,580 or 44c a share in first nine months of 1939.

TRANSCONTINENTAL & WESTERN AIR—Report for nine months ended Sept. 30 shows net profit of \$237,187, after depreciation, federal income taxes and after giving effect to recent decision of CAB regarding mail pay. This is equal to 25c each on 950,000 shares of capital stock and compares with net loss of \$5,489 for similar 1939 period as adjusted.

THOMPSON PRODUCTS INC.—For nine months ended Sept. 30 net profit was \$1,606,704 equal to \$5.68 a share on common, comparing with \$938,673 or \$3.02 in 1939 first nine months. Report for quarter ended Sept. 30 shows

net profit of \$560,802, after depreciation, interest, federal income taxes at 24%, equal after dividend requirements on 28,290 shares \$5 preference stock, to \$1.78 each on 295,457 no-par common shares. No provision has been made for excess profits taxes. Sales for period totaled \$18,007,406, compared with \$15,-570,893 for entire 1939.

UNITED AIRCRAFT CORP.—Consolidated net profit for first nine months was \$9,199,768 or \$3.46 each on 2,656,691 shares, compared with \$5,799,306 or \$2.18 a share earned in first nine months 1939. Provision for federal and Canadian income and excess profits taxes for period totaled \$9,589,087 against \$1,166,826 in corresponding period last year. Of total tax provision, \$7,993,821 was charged to third quarter earnings. Net profit for third quarter after taxes was \$2,971,662 (\$1.12) compared with \$3,848,077, after \$1,093,903 taxes, (\$1.45) in previous quarter. Sales for nine months totaled \$78,714,377.

Shipments of third quarter represent about half of shipments for nine month period, "due principally to a record output by Pratt & Whitney aircraft engine division, where shipments are running about 25% over anticipated capacity from available equipment," company states.

"October was an all-time record, with engine shipments running at approximately \$12,000,000 for the month. Approximately 80% of engine shipments for nine month period were for export. Shipments of all products to date are approximately 75% for export."

EASTERN AIR LINES INC.—Net profit of \$792,221 or \$1.41 a share for first nine months, after providing \$679,370 for depreciation and obsolescence and \$390,000 for federal income taxes. Comparable 1939 period showed profit of \$456,840 after provision of \$572,178 for depreciation and obsolescence and \$160,000 for federal income taxes. During first nine months 1940, capital expenditures for fixed assets amounted to \$1,627,942, of which \$1,170,227 was for planes, \$200,250 for engines and \$65,-117 for aircraft radios.

Passenger revenue totaled \$6,198,788, increase of 56% over corresponding period of last year. Air mail revenue amounted to \$1,388,727, up 8%, and air express revenue totaled \$204,566, up 37%.

UNITED AIR LINES TRANSPORT CORP.—Third quarter net income totaled \$728,868, after all charges, equal to 48½c a share, compared with \$557,-328 or 37c for corresponding quarter of 1939. For 12 months ended Sept. 30, net income was \$985,177, against \$151,-946 for 12 months ended Sept. 30, 1939.

Dividends

SOLAR AIRCRAFT CO.—10c on each of 236,642 common shares \$1-par, payable Dec. 16 to stock of record Dec. 2.

CURTISS-WRIGHT CORP.—50c on common stock of record Nov. 23, payable Dec. 14. Similar amount was paid on Class A stock Sept. 30.

WRIGHT AERONAUTICAL CORP.—\$4 a share payable on Dec. 14 to stock of record Nov. 29.

BORG-WARNER CORP.—regular 25c and special 50c dividends on common



Coming Up

Having been submitted for copyright, Republic Aviation Corp.'s new official emblem soon will appear on company letterheads, work shirts, overalls, license plates, lapel pins, advertising and airplanes. The emblem, of a blue and silver combination, was suggested in its general principles by Joseph L. McClane, vice-president, and was created in final form by Hugo Metzger, leading industrial and trade mark designer.

payable Dec. 10, of record Nov. 26.

NATIONAL AVIATION CORP.—50c payable Dec. 16 to stockholders of record Nov. 30, bringing total for year to 75c, same as in 1939.

AERO SUPPLY MFG. CO. INC.—30c on Class B stock, payable Dec. 23, of record Dec. 6. Previous payment was 25c on July 15.

B. F. GOODRICH CO.—50c payable Dec. 20, of record Dec. 6. Previous payment was \$1 on Dec. 18, 1939.

ALUMINUM LTD.—\$2 on common stock, payable Dec. 20, of record Nov. 30, bringing total for year to \$8.

Applications for Listing

SOLAR AIRCRAFT CO.—236,562 common shares, \$1-par, already issued and 213,438 shares to be registered upon notice of issuance, on New York Curb Exchange.

U. S. PLYWOOD CORP.—238,514 common shares, \$1-par, already issued and 37,125 shares to be registered upon notice of issuance, on New York Stock Exchange.

Bendix Aviation Sells Stock in Home Appliance Company

Bendix Aviation Corp. has sold to Atlas Corp. and to Allen & Co., New York investment bankers, its minority interest in stock of Bendix Home Appliances Inc. which was acquired in 1937. The deal included Bendix Aviation's bond holdings as well as its 25% voting interest. Atlas previously held 23,650 of the appliance company's 121,840 Class A shares and 2,600 of its 762,640 common shares, or 6½% of voting strength, now increased to about 19% since the joint purchase with Allen & Co. was on 50-50 basis.

Withdrawal from the home appliance field, the Bendix management stated, was prompted by increased responsibility in production of aviation, automotive and marine equipment for the national defense program. Edwin R. Palmer, vice-president and treasurer of Bendix Aviation, has resigned as a director and member of appliance company's executive committee.

Safety Goggle Developed

A study of Army Air Corps accidents has indicated that the goggle which the flying corps has used up to the present time has often resulted in serious injury to the pilot when he was hurled against the dash of the plane at the time of a crash. To correct this condition, Virgil H. Hancock has developed a protective aviation goggle which would protect the pilot's, observer's or gunner's face in case of accident. The light-weight goggle, perfected with the approval and under the supervision of Col. R. K. Simpson and Lt. Edward P. Dimmick, Air Corps, uses a flat instead of an edged guard and is protected by a processed sponge rubber designed evenly to distribute the force of a shock.

Breeze Corps.' Sales Near \$4,000,000

Net sales of Breeze Corps. Inc. have jumped from \$136,805 in 1927, when the company began operations, to \$550,015 for 1940 up to Nov. 1, according to statement issued by J. F. Lucas, vice-president.

Breeze, which at the beginning specialized in manufacture of automotive accessories, today produces important parts for both commercial and combat aircraft.

Following summary of Breeze Corp. net sales, not including subsidiaries, from 1927 to Nov. 1 indicates steady growth independent of the national defense stimulus.

1927	\$136,805
1928	191,572
1929	192,230
1930	211,340
1931	300,190
1932	227,920
1933	398,965
1934	447,038
1935	905,884
1936	1,221,322
1937	1,480,865
1938	2,572,708
1939	2,598,925
1940 to Nov. 1	3,550,015
Total	\$14,436,575

AVIATION & TRANSPORTATION CORP. has sold Columbia Axle Co. Cleveland, to Walter E. Schott and Louis Goldsmith, Cincinnati industrialists, it was learned in mid-November. The Columbia organization, of which Roy H. Faulkner is president and general manager, manufacture two-speed axles and is engaged in the machining of bombs.

REYNOLDS METALS CO., now constructing an aluminum production plant at Sheffield, Ala., recently organized in Delaware the Bauxite Mining Corp. to conduct bauxite exploration and mining activities.

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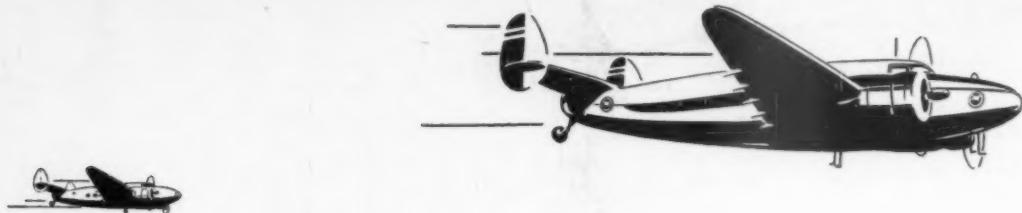
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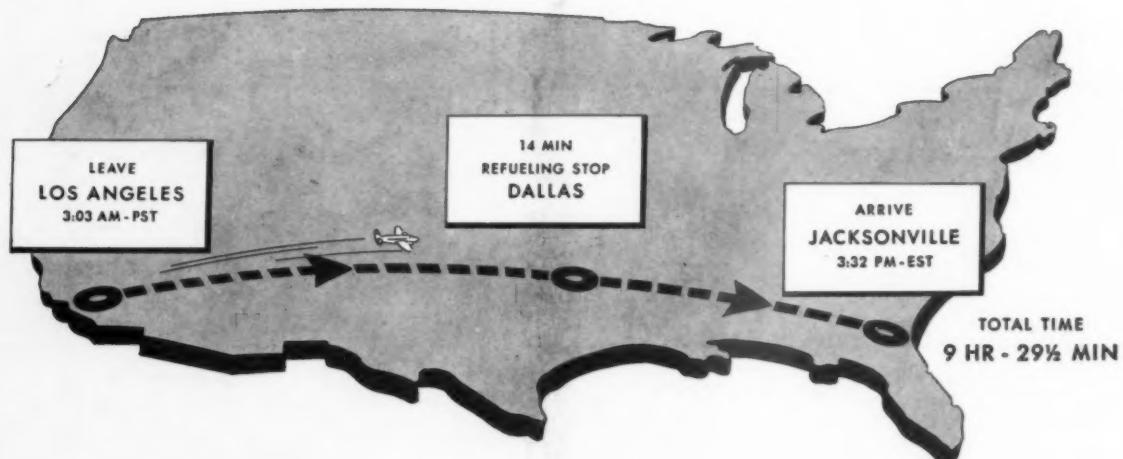
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